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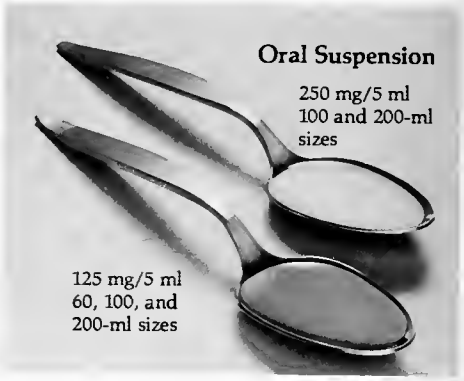

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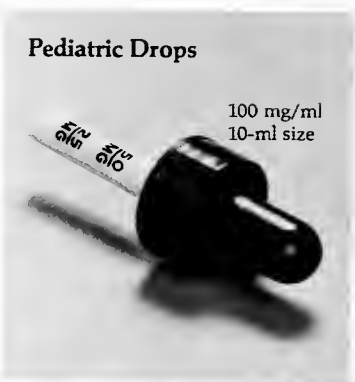

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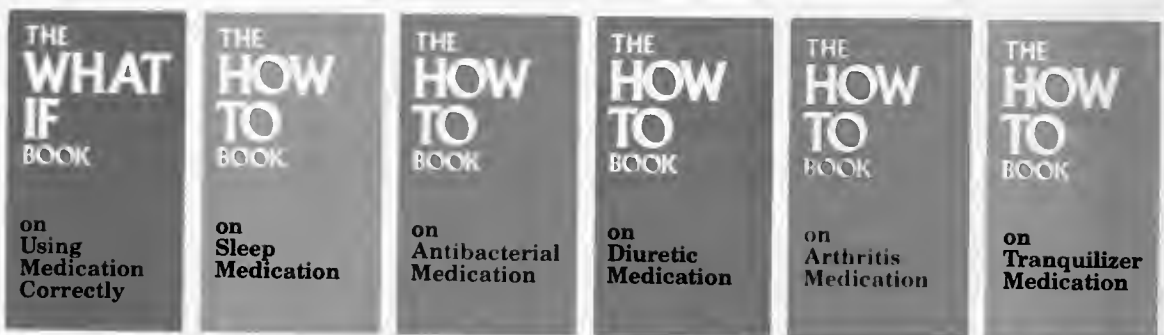

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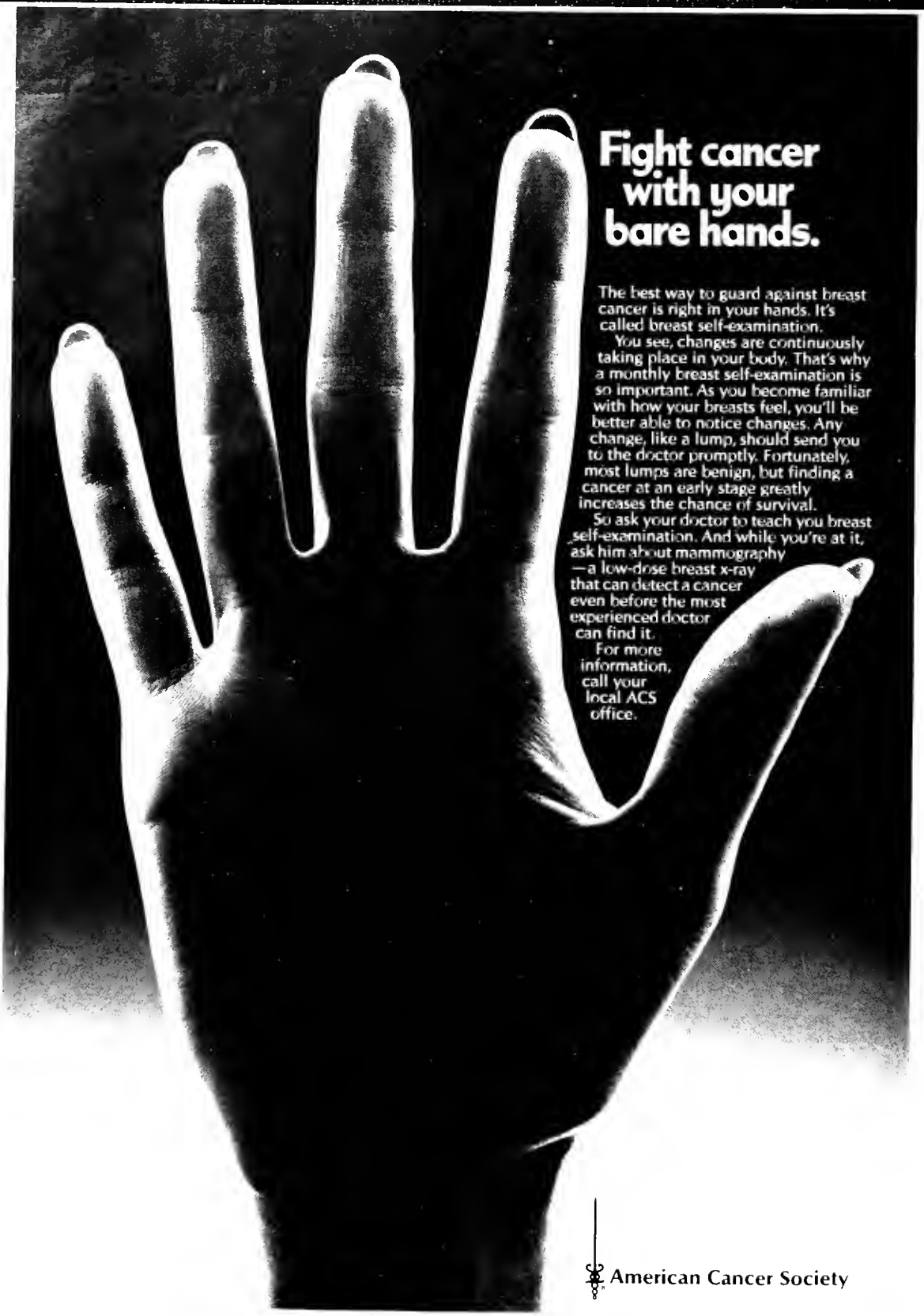

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Marketing in Practice Management

Curtis P. McLaughlin, D.B.A., and James E. Littlefield, Ph.D.

ABSTRACT **Marketing consists of managing the exchange process through which patient consumers and physician providers receive mutual benefits. Marketing requires a consideration of price, place (location), promotion and product or service along with determining what patient consumers want and need, and how to meet those needs and wants most effectively. It is our conviction that not only is marketing ethical, but that fulfillment of the responsibilities of medical ethics — the planned satisfaction of patients' physical and psychological needs — requires marketing.**

PHYSICIANS in private practice hear frequently about the flood of new physicians soon to complete training and about the government's actions to limit health care costs and increase competition in the health sector. To maintain adequate practice volume and income under such conditions more and more physicians are going to have to market their services better to reach the patients that they wish to serve.

So far North Carolina has been spared the intense competition among Health Maintenance Organizations (HMOs) and large groups and emergency medical centers that has occurred on the West Coast, in Minnesota and perhaps elsewhere. But we have seen conflicts between psychologists and psychiatrists, between family practitioners and other primary care physicians, and between rural health centers and county health departments. There is, moreover, increasing competition between large referral and teaching centers and regional speciality groups and hospitals. In addition, most Medicaid patients have been limited to 18 office visits per year, fees have been limited and it seems inevitable that Medicare will be similarly restricted in the near future. Practice volume and perhaps income will fall for those who are not increasingly effective in reaching on a rational and planned basis those they want to serve.

One has only to look at what has happened in dentistry to see what might lie ahead. That may include careful consideration of reducing enrollments, a subject now officially under consideration at the School of Dentistry in Chapel Hill.

WHAT IS MARKETING?

Marketing means more than selling and advertising. It means planning the relationship that exists between the physician and actual or potential patients or other constituencies. Marketing starts with a rational plan to bring about mutually beneficial exchanges of services and funds with target populations to achieve the practice's objectives. It implies relying heavily on those persons' needs and desires and involves using effective promotion, education, pricing, and practice management to inform those groups, to motivate them and treat them effectively and to their satisfaction.

A simple description of marketing is that it involves four P's — price, place, promotion, and product or service. Price in medicine is more complex than at the supermarket. It includes not only the fee schedule, but also the collection process and the handling of third party payments. It includes such full economic and psychic costs to the consumer as travel, lost income while waiting, provision for child care, impact on perceived self-worth, etc. It may also include the prices at the hospital where you practice, especially for laboratory and x-ray services, and the charges of the specialists to whom you regularly refer.

Place is easier to define. It certainly includes your location, but may also include frequency of home and nursing home visits, and hospital privileges. The difference between a financially viable rural practice and an economically unsound one may be the amount of in-hospital care that the physician provides. Thus heavy consideration must often be given to the hospital as "place," even if one is a primary care deliverer.

Today, as physicians are better and better trained and more readily available, the patient becomes more concerned with the convenience of office location and appointments. The consumer feels entitled to a clean, comfortable, safe place to wait for only a reasonable time. Practices which have felt underutilized have increased consumer demand by offering services at new times and at other places.

Promotion is the unloved part of marketing, the part which bothers physicians most. It involves advertising, public relations, community relations, patient education, "bedside manner," — all of the items

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which enable the consumers to make informed decisions about their health, informed choices among health providers. We will say more about why this has been an uncomfortable issue for the professions under the subject of professional ethics.

The product in medicine is a complex one. It has grown more varied as medicine has specialized and sub-specialized and as technical sophistication has moved from big centers to regional and local hospitals. Product includes the range of services that you provide and to which you refer patients. It also includes your office and office staff and the work you do including hospital activities, together with the patient education and psychosocial support you and your staff offer. It includes the tangible therapeutic interventions you perform and the intangible impact of that process on the patient's physical and emotional well-being. It even includes how people will react when your patient says, "I went to see Dr. Kronkheit today." (Incidentally, can you predict that reaction accurately? If not, you are not on top of your market. If you can't say what you would prefer as that reaction, you haven't started doing marketing.)

WHY SHOULD PHYSICIANS DO MARKETING?

Physicians have always marketed. Physicians have introduced themselves to other physicians in hopes of referrals, entertained community leaders, participated in community service organizations just as ministers and other professionals have. They contribute to arts events as patrons and list in the Yellow Pages. They announce practice changes through the media. The physician has been a seller as well as a healer since the times of Hippocrates and Galen, even where socialized medicine is practiced. But the need for it is increasing rapidly today.

The population growth of the United States has slowed sharply while the production of new physicians has not. North Carolina is a Sunbelt State and is experiencing in-migration, but these new people settle in pockets such as the Research Triangle, the Piedmont Triad and the Asheville area. These are all attractive areas to physicians too and the site of many preceptorships and residency programs, both determinants of where new physicians decide to practice. The key issue for a practice is not whether there are too many physicians statewide, but the number of individuals — physicians and non-physicians — delivering some or all of the services the practice would like to provide to the local target population.

In-migration, while it does include some retirees, involves mostly young, educated, and healthy families with low birth rates and low rates of utilization of health services. For pediatrics the outlook is thus only fair.

For geriatricians it is good, but the patients' ability to pay remains in doubt. There still are underserved rural areas, but again ability to pay is a problem and towns of 10,000 or more are well served. The number of active, non-federal physicians in North Carolina has gone from 4,831 in 1972, or 1 per 1,085 residents, to 7,095 in 1980, or 1 per 828 residents, and will continue to climb even faster over the next decade. At the same time the number of nurse practitioners and physician assistants has gone from fewer than 100 in 1972 to 677 in 1980.

With increased availability have come changed attitudes toward health care. People are becoming more cost conscious. There is a trend among employers to contract with health maintenance organizations directly or through insurers in order to reduce health care costs. Individuals, having more choices, are becoming more selective, not sticking to one provider, and practicing self-triage and self-referral. Surveys, even among rural populations, show that the use of a number of physicians by an individual or family depends on the perceived nature and severity of the problem. Self-help becomes more widespread as people read books and join new organizations. So there is a need, often greater than you can see inside your office, to convince people to use your services, where effective, for preventive as well as acute episodes, especially the adult males who tend to be the last ones to visit a doctor.

MARKETING AND PROFESSIONAL ETHICS

The medical profession has long felt that direct solicitation is not in the best interest of the public or the profession. It has been felt that such promotion might deceive the average person or at least be misunderstood by him. In October 1979 the Federal Trade Commission ordered the American Medical Association to "cease and desist" from restricting, regulating, impeding, declaring unethical, interfering with, or advising against advertising of physician services. Since then some subtle changes have appeared. For example, a Charlotte station recently carried an advertisement from the American College of Surgeons which indicated that one should seek a second opinion about surgery only if one has some doubt or uncertainty about what the first physician has presented as the alternatives. Further, the advertisement states that, if one seeks a second opinion, it should be from a qualified surgeon, implying surgeons' superiority over other physicians.

But the real issue is not what is unfair marketing in medicine, but the discharge of the seven Principles of Medical Ethics (Table 1). Are they consistent with a marketing-oriented practice strategy? Principle V indicates that the physician "shall continue to . . . make relevant information available to patients, colleagues and the public. . . ." Principle VI indicates that, except in emergencies, the physician shall be free to choose whom to serve, with whom to associate, and the environment in which to provide medical services. Principle VII states that "a physician shall recognize a responsibility to participate in activities contributing to an improved community." All of these seem to imply to us a need and a responsibility to market one's practice within the bounds of professional responsibility to help the

consumer with informed choice, to build the kind of practice the physician chooses, and to help the community achieve the state of well-being it deserves. Furthermore, persuading patients to do what is appropriate and effective with a positive purpose is far better than alternatives such as increasing laboratory use, more frequent return visits, or many of the other behaviors that a physician can slide into in times of economic stress.

CONSTITUENCIES

The management of transfers of goods and services with specific groups calls first for the identification of the constituencies to be reached. First and foremost are the patients — current and potential. But there are others — referral sources, public officials, your employees, hospitals, businesses and other professionals. For each constituency you need to identify their behavior patterns and what they want or need in the way of health services. This involves finding out intuitively or by market research how they make their choices. Then the physician can shape the practice to meet their needs or attempt to motivate that constituency to change its behavior.

Potential patients include the whole local population, so they are incredibly diverse in wants, needs, ability to respond, and attitudes toward physicians and health. Therefore, a given marketing approach is likely to appeal to only a segment of that population. One strategy is to try to reach the broadest possible cross-section of potential patients. But more frequently it is better to select the segments of the patient population to be marketed to and determine how to reach them. Frequently it is better to select what they can benefit from most in a practice and take specific steps to make them aware of what you have to offer.

The technical term for trying to reach a defined subset of clients or potential clients is called market segmentation. In the case of a medical practice this may often mean going after the segment most desirable to you. If, however, it is adequately served already, the answer may be to seek out an underserved population as your next target segment.

TABLE I

American Medical Association Principles of Medical Ethics

Preamble:

The medical profession has long subscribed to a body of ethical statements developed primarily for the benefit of the patient. As a member of this profession, a physician must recognize responsibility not only to patients, but also to society, to other health professionals, and to self. The following Principles adopted by the American Medical Association are not laws, but standards of conduct which define the essentials of honorable behavior for the physician.

I. A physician shall be dedicated to providing competent medical service with compassion and respect for human dignity.

II. A physician shall deal honestly with patients and colleagues, and strive to expose those physicians deficient in character or competence, or who engage in fraud or deception.

III. A physician shall respect the law and also recognize a responsibility to seek changes in those requirements which are contrary to the best interests of the patient.

IV. A physician shall respect the rights of patients, of colleagues, and of other health professionals, and shall safeguard patient confidences within the constraints of the law.

V. A physician shall continue to study, apply and advance scientific knowledge, make relevant information available to patients, colleagues, and the public, obtain consultation, and use the talents of other health professionals when indicated.

VI. A physician shall, in the provision of appropriate patient care, except in emergencies, be free to choose whom to serve, with whom to associate, and the environment in which to provide medical services.

VII. A physician shall recognize a responsibility to participate in activities contributing to an improved community.

The key element in dealing with your current practice is your office, especially you and your office staff. This is basic. There is no use reaching out to new patients if they are going to be turned off when they come. They must be made to feel comfortable and well cared for. This starts with your taking an interest in them as human beings, in their fears, concerns and pleasures, and how they feel as they are welcomed to your office. It involves asking them about the time they have had to wait and about the people in the office. Friendly, helpful office assistants are a must. They can overcome a lot of inconvenience when an emergency calls you away or you fall behind schedule. But they must smile as well as perform effectively. Patients can be put off easily by unanswered phones, inappropriate delays for appointments, and unrealistic office waits. Patients also expect effective insurance billing and reasonable collection procedures, telephone access to the physician, available and convenient parking and convenient office hours.

In the absence of a specific survey of your patients, a marketing-conscious office staff can provide useful feedback on how patients feel about you and your practice. They can even ask patients their opinions about proposed changes such as new office hours or new procedures. They also overhear patients talk to each other about such matters as your approach, your fees, and your collection procedures, which are hard for you to probe directly.

A key to reaching potential patients is the word-of-mouth advertising that your own patients do. People who become aware of your practice and are considering visiting you are most likely to ask someone they know about you. If the responses are positive, you will probably get a new patient; if negative, your chances of seeing that person are slim. So all the good public relations in the community will come to naught unless you keep your present patients happy. We all know that you can't tell people just what they want to hear, that we all make mistakes with patients and that we simply cannot stand a few individuals. The objective is not to please everyone, but to have the office be a place which most reasonable people would consider pleasant, attractive,

and efficient, as well as a place where good medicine is practiced.

The need to market to those who send referrals has already been noted. These include other physicians, other health care providers, and community leaders. In the future it may become necessary to market more to those who pay the bills. As they become more cost conscious, these employers and third party payers may become more active in steering individuals toward providers they consider to be cost effective. At least seven states are considering or actually limiting the freedom of choice of Medicaid patients to select providers, as allowed under new "deregulated" federal guidelines.

Another key constituency that has to be considered is your own staff. They have to be sold on the need to conduct their interactions with patients and the public so as to support and implement your marketing strategy. In a group practice the marketing (call it education or persuasion) task may include some of the partners or other professional employees. In addition, the whole medical profession needs to convince the general public and the legislature that it is cost conscious and has the welfare of the public at heart. Most surveys show the public trust of the medical profession and all other professions to be declining. Recent actions in the area of competition, malpractice, and payment schedules indicate that more work is needed to develop a strategy to regain public respect and trust.

CONTROLLING YOUR PRACTICE

Having your practice under control means that you are as busy as you wish to be serving the types of patients you prefer to see, and solving the problems with which you prefer to work. Further, it means you are receiving enough income to make you and your family feel comfortable and that you have enough time off to devote to yourself and your family's needs. "All very good," you say, "but how does one achieve such a pipe dream?" The answer lies in setting and monitoring the proper personal and professional goals.

Goals are desired future states of affairs. That is — what you want things to be like in the future in all aspects of your life. In order to achieve a goal, change is necessary. If one is unwilling to direct efforts toward the goals set, to make changes, then there is no reason to set goals in the first place.

Goals set by most professionals seem to include: **financial** — having the level of income desired in order to be comfortable personally and to do what we desire for others; **interest** — having a challenge, being able to use one's full range of talents on the problems you enjoy attacking; **peer respect** — having colleagues, patients, employees, friends, and the community in general recognize and respect what you are doing; **service-to-mankind** — knowing that you have made a contribution in the world. Table II lists these goals in more detail.

TABLE II

Goals To Be Set

1. Interest
   a. Types of patients seen
   b. Services available
   c. Educational activities
   d. Personal time off
2. Financial
   a. Practice and personal income levels
   b. Practice expense levels
3. Peer Respect
   a. Professional activities
   b. Size and extent of physician's community network
4. Service to Mankind
   a. Quality of care
   b. Service to community

Just setting goals, however, is not enough. To get there a plan must be formulated, preferably in writing, about how you will reach each of these goals. The time periods to reach each of these goals will vary. For example, you can probably set income goals for each of the next five years. For the service-to-mankind goal, you are more likely to take stock of your satisfaction every five or 10 years in your career. Once you have decided on your goals and the times at which you wish to achieve them, then you can develop a step-by-step plan to make the changes that you want to accomplish. Of course, you will have to review these goals and plans as changes bring results and you evaluate where you are. But only through a complete and continuing process of setting goals can a physician move to bring the practice under control and avoid feeling blown by the winds of fate. Table III illustrates how one might develop a set of written goals in a practice.

TABLE III

Partial Practice Goal Worksheet

PRACTICE AND PERSONAL INCOME LEVELS

	Practice	Personal
Income last year	$_____	$_____
Goal for this year	$_____	$_____
Goal for the second year	$_____	$_____
Goal for the third year	$_____	$_____
Goal for the fourth year	$_____	$_____
Goal for five years from now	$_____	$_____

How will this goal be accomplished?

QUALITY OF CARE (write goal as clearly and specifically as possible)

How will this goal be accomplished?

Completed by _____

Date _____

TARGET MARKETING

One aspect of marketing that many physicians overlook is that of target marketing, choosing the set of patients you wish to treat rather than having them choose you. You do practice a form of target marketing when you locate offices. However, given that most physicians live in nicer and higher income areas of town and wish to locate their offices reasonably nearby, they often all target the same set of potential patients, not necessarily the ones that help meet goals in a competitive era. Those higher income, higher status patients are the ones that most physicians may be going after. It may be more productive for financial and other goals to go after other portions of the potential patient market.

Some physicians, for example, may find that smaller communities, those with smaller populations, but also wth less traffic, less crowded facilities, and lower housing and other costs, are better suited for them and their families. This is a form of target marketing that more and more physicians are turning to now and will turn to more in the future.

We are not saying just what target market is good for you, your practice or your group. We are saying, however, that target marketing should be a concern and a consideration in how you organize your practice and its offerings to reach the types and numbers of patients you wish to treat.

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The Treatment of End-Stage Renal Disease

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ABSTRACT **The activities of the Nalle Clinic Kidney Center are reviewed and trends are noted. The rapidly increasing number of end-stage renal failure patients being treated by in-center hemodialysis has prompted greater efforts to encourage patients to accept either home hemodialysis or peritoneal dialysis. The steadily improving cadaveric kidney graft survival rate should also help rehabilitate additional patients.**

THE rapid change in the treatment of end-stage renal disease over the past decade has been reflected in the treatment of patients with chronic renal failure in the Charlotte area. Because Charlotte represents the largest population area in the Carolinas and is a considerable distance from the medical schools, it was decided in 1970 to develop a comprehensive program for the treatment of end-stage renal disease in order to better serve the approximately two million people who live within a 75 mile radius of the city.

This program has been active for more than 10 years and offers all the alternative therapies for the treatment of advanced renal failure. Consequently, programs for home dialysis training in both hemodialysis and peritoneal dialysis have been developed along with an active transplant service.

Part of the success of this program has been due to the excellent cooperation which exists between neighboring dialysis centers, medical schools and this facility. Especially important was the support of the medical school faculties of Duke University and the University of North Carolina when this program was in its infancy. We will review the activities of our program over the past 10 years and comment on trends in the care of patients with end-stage renal disease.

IN-CENTER HEMODIALYSIS

The dramatic increase in the hemodialysis population has been noted not only locally but throughout North Carolina, the United States, Western Europe, Australia and Japan.[1,2] Many factors have contributed to this rapidly expanding population, especially in the United States. In 1972 federal legislation established funding for chronic dialysis and thereby removed the primary and major economic restraint. One result was a proliferation of dialysis centers which ultimately placed most patients within an hour's drive of a dialysis unit. In addition, as technology improved and experience increased, many patients previously thought to be unacceptable because of age, systemic disease or associated medical conditions were accepted into dialysis programs. Dialysis became readily available to most residents of North Carolina and limitations such as cost, transportation, age or medical conditions were now eliminated. Consequently, the age and size of the dialysis population have steadily increased. This trend was certainly apparent in Charlotte where the average age of our patients has increased from 41 to 52 years over the past seven years.

Another factor contributing to the

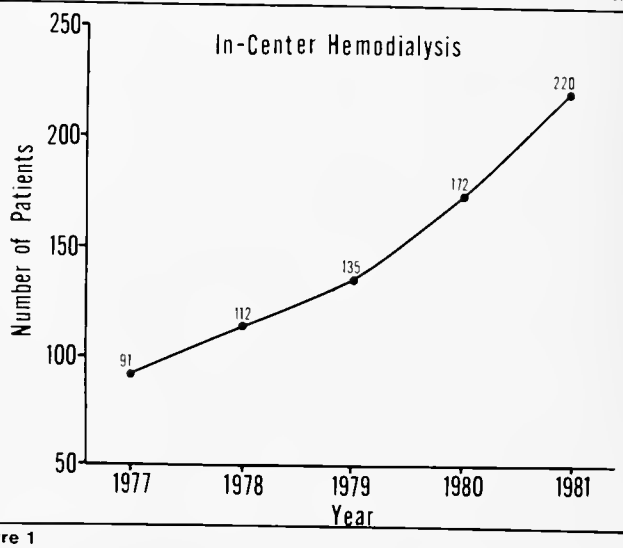

Figure 1

From the Nalle Clinic Kidney Center, 928 Baxter Street, Charlotte, N.C. 28204

Reprint requests to Dr. Farmer

expanding dialysis population has been our inability to increase the number of kidney transplants, primarily due to the difficulty in obtaining enough suitable cadaveric or living related donors. In addition, cadaveric graft rejection rates have, until recently, remained high.

In June 1981 approximately 975 patients in North Carolina were undergoing hemodialysis. On January 1, 1982, the in-center dialysis population at the Nalle Clinic Kidney Center plus the Gaston County satellite facility totaled 220. In addition, 15 chronic hemodialysis patients were being dialyzed at Charlotte Memorial Hospital, which serves primarily as a backup dialysis center for those patients requiring hospitalization.

During the past five years, the number of in-center hemodialysis patients has almost tripled. In January 1977 there were 75 in-center dialysis patients but in spite of an active home dialysis and transplant program, this population has steadily increased (Figure 1). Accordingly, we have intensified our efforts to find suitable home dialysis and transplant candidates. However, a large group of patients will continue to require in-center hemodialysis because their family situations or general health prevent them from becoming suitable home dialysis candidates.

HOME DIALYSIS TRAINING

Home dialysis training has always been an essential part of the treatment program at the Nalle Clinic Kidney Center and reflects the statewide commitment to dialysis in the home environment. North Carolina ranks third in the United States in percentage of dialysis patients treated at home.

Obvious advantages to dialysis in the home include decreased cost, increased flexibility in the dialysis schedule and the opportunity for the patient to participate more actively in his care.

Initially home dialysis training was limited to hemodialysis, but since 1975 we have included peritoneal dialysis as well. This has the advantage of offering the alternative therapy which best fits the patient's lifestyle as well as significantly increasing the number of patients who can be successfully home trained. Because of the nature and simplicity of chronic peritoneal dialysis, all patients are treated at home, eliminating the more expensive in-center therapy. Backup peritoneal dialysis is available at Charlotte Memorial Hospital if hospitalization becomes necessary.

In 1976, a new method of peritoneal dialysis proposed by Popovich and Moncrief[3,4] was based on a low flow prolonged dwell of dialysis fluid, and was called continuous ambulatory peritoneal dialysis (CAPD). This procedure is performed after a permanent dialysis catheter is placed in the peritoneal cavity. Approximately every four hours during the day two liters of dialysis fluid is exchanged with a longer dwell time at night. Unfortunately, the incidence of peritonitis is high because of the frequent connect/disconnect procedures, which often must be done at inconvenient places.

A modification of this procedure called continuous cyclic peritoneal dialysis (CCPD) was developed by our group in an effort to combat the high rate of peritonitis and restrictions on freedom during the daytime.[5,6] The majority of our home peritoneal dialysis patients are trained in this technique (CCPD).

A Tenckhoff catheter is used for peritoneal access. Every evening the patient connects to an automatic cycling machine for three cycles, with two liters of dialysate, lasting three hours each. In the morning, two liters of fluid are left in the peritoneal cavity before the patient disconnects from the machine and resumes normal activity. During the day the patient has complete freedom while carrying two liters of dialysate in the peritoneal cavity. In the evening the same routine is repeated. Since one connection and disconnection between the peritoneal catheter and the cycler occurs, the risk of bacterial contamination of the peritoneal cavity and therefore of peritonitis is greatly reduced. Furthermore, all connections and disconnections take place in an environment conducive to good sterile techniques.

Chronic hemodialysis and peritoneal dialysis have their advantages as well as disadvantages.[7] The procedure time is short in hemodialysis (8-15 hours/week). However, it does require a capable and highly motivated partner, good vascular access, heparinization of the blood and a stable cardiovascular system.

On the other hand, chronic peritoneal dialysis is a much simpler technique providing a steady, more physiologic state of continuous dialysis. It does require strong motivation as well as attention to strict

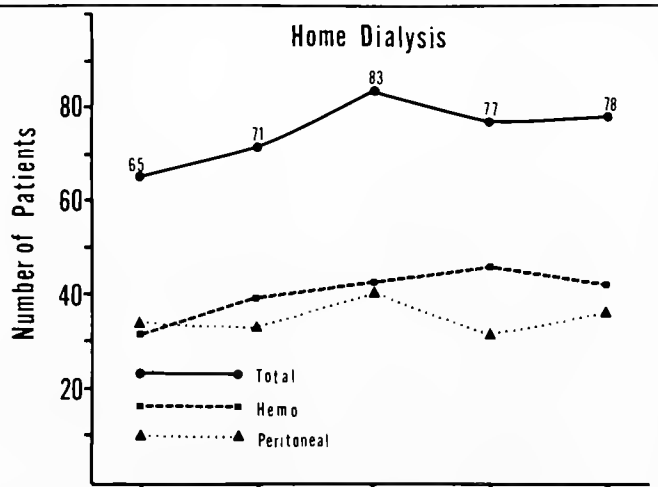

Figure 2

sterile technique. Daily dialysis, which confines a patient at night because he is connected to the cycler every evening, is required. In addition, peritonitis continues to be a problem although much less than anticipated because of the extensive training of patients in sterile techniques and fewer connecting procedures.

Although the number of our patients on home dialysis has remained rather stable at approximately 75, several trends are apparent (Figure 2). More people are being trained on home peritoneal dialysis rather than on home hemodialysis; however, they tend to have more serious medical problems, and consequently, a higher mortality rate. For example, only 20% of the home hemodialysis patients are diabetic as compared to 27% diabetics in the peritoneal dialysis population.

When the two types of home dialysis are compared for the year 1981 through June 1982 several trends are apparent. The mortality rate for home hemodialysis patients was 5% whereas the mortality rate for CCPD was 12%. During the same period the dropout rate (percent of patients returning to in-center dialysis or switching to another method of dialysis) was 21% for hemodialysis and 7% for CCPD. In general, patients with unstable cardiovascular systems or collagen vascular diseases have entered the home peritoneal dialysis program.

Because the home training process is expensive and time consuming it is most important that candidates for home dialysis training be carefully selected. During the past 26 months (April 1980 to June 1982) 58 patients have been successfully home trained on CCPD. All but 15 of these patients are still dialyzing at home, which represents a 74% home peritoneal dialysis success rate. Of the 15 patients no longer on CCPD only two returned to in-center hemodialysis. Seven patients died, three received transplants, two switched to home hemodialysis, and one was able to discontinue dialysis because of improving renal function.

The results of our home hemodialysis training program have also been encouraging. During the past five years 72 patients have been successfully home trained. This represents a home hemodialysis training completion success rate of 85%.

We hope to keep approximately 25% of our total dialysis population on home dialysis and we are increasing our efforts to accomplish this. Unfortunately, the proliferation of dialysis centers has increased the difficulty in motivating patients and their families to accept home dialysis training.

TRANSPLANTATION

In May 1970 a renal transplant team was formed at Charlotte Memorial Hospital. This team was composed of vascular surgeons from the Sanger Clinic, urologists from the Hawes Clinic and nephrologists from the Nalle Clinic Kidney Center. During the past 12 years over 250 transplants have been performed at this center.

Because Charlotte Memorial is a charter member of the Southeast Organ Procurement Foundation, locally obtained cadaveric kidneys are shared between the member institutions of the state and region. A tissue typing laboratory has been operational at the hospital since 1976 and two organ procurement technicians are employed fulltime in the continuing effort to obtain cadaveric kidneys. A total of 220 cadaveric kidneys have been procured at this institution over the past 12 years.

Significant improvement in the success rate of cadaveric kidney transplants at this center reflects a number of advances in the field of organ transplantation. Although earlier one-year survival rates averaged between 35%-45%, more recent results have shown a considerable improvement. One-year cadaveric graft survival has increased from 44% in 1977 to 63% in 1981. In addition, the continuing high success rate of living related donor transplants (95% one-year survival) has also been encouraging. Unfortunately, the problems of obtaining adequate numbers of cadaveric and living related donors continues to limit the number of transplant procedures being performed.

Strict criteria have been established in order for a living relative to be a donor. A relative must be willing to donate, must be in excellent health, have two normally functioning kidneys and have a suitable tissue match with the recipient. Cadaveric kidney donors have been difficult to obtain, often because of the reluctance of the next of kin to allow a deceased family member to be an organ donor. This has been particularly disappointing because transplantation is the optimum treatment for the achievement of the total rehabilitation of the patient.[8]

Several factors are thought to be responsible for the increasing percentage of functioning grafts following cadaveric transplantations. Graft survival has been improved by challenging every cadaveric recipient prior to transplantation with a series of blood transfusions.[9,10] The results to date indicate that cadaveric graft recipients who receive blood transfusions prior to transplantation have a significantly higher graft success rate.

A second advance has been the increasing availability of antilymphocytic globulin (ALG)[11] which appears to have increased our success rates. ALG is presently being produced at the Bowman Gray School of Medicine of Wake Forest University. It is made by injecting an extract of tonsillar tissue into rabbits which produce antibodies to the tonsillar lymphocytes. Tonsillar tissue has been obtained from a number of hospitals in the Charlotte area including Presbyterian, Mercy, and Charlotte Memorial. Although controversy continues over the effectiveness of ALG, this material seems to have improved graft survival in our transplant populations.

Since 1979 all cadaveric kidney recipients have been given blood transfusions prior to transplantation and ALG has been routinely used after surgery to prevent graft rejection. In addition, these patients receive prednisone and azathioprine in conventional dosages in order to obtain optimum immunosuppression. This increased cadaveric kidney graft survival rate along with the continued high success rate of living related donor transplants has been a most significant and encouraging development.

CONCLUSION

Although the past 10 years have seen a rapid increase in the number of patients being treated by in-center hemodialysis, it is anticipated that in the future more patients will be placed on alternative forms of therapy. A greater effort is being made to encourage more patients to accept home dialysis. With the initial success of both hemodialysis and peritoneal dialysis in the home, an incentive has been created to design a more specific program in one of these therapies in order to better meet the needs of each individual.

Because of recent advances in kidney transplantation, cadaveric kidney graft success percentages have slowly been improving. This success has been partially due to better patient selection, to blood transfusions prior to surgery, and to the more widespread use of ALG following cadaveric transplantation. These advances should help decrease the already large in-center hemodialysis population and improve the quality of life for the patient suffering from end-stage renal disease.

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Acute Rhabdomyolysis Associated With an Overdose of Lorazepam, Perphenazine and Amitriptyline

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ABSTRACT **We report a case in which an overdose of lorazepam, perphenazine and amitriptyline was associated with acute rhabdomyolysis. The addition of these medications to the list of substances associated with rhabdomyolysis suggests that all patients ingesting overdoses of psychotropic or sedative drugs be carefully screened for acute rhabdomyolysis.**

INCREASED awareness of the clinical features and laboratory findings seen with acute rhabdomyolysis has resulted in an ever lengthening list of conditions associated with this condition.[1] We report the occurrence of acute rhabdomyolysis in a patient who ingested an overdose of lorazepam, perphenazine and amitriptyline.

CASE REPORT

A 36-year-old woman ingested an overdose of lorazepam, perphenazine and amitriptyline following an argument with her boyfriend. By her own admission, it was established that the overdose was intentional and occurred between 11 p.m. and midnight when she took sixty (60) 1 mg lorazepam tablets and sixty (60) tranquilizer-antidepressant tablets containing a total of 240 mg perphenazine and 1500 mg amitriptyline. At noon the next day she was found unconscious on the floor next to her bed and was taken to her local emergency room where she was unresponsive with shallow respirations. Endotracheal intubation was done and ventilation with 100% oxygen begun. A nasogastric tube was placed and the stomach was lavaged with saline without recovery of any medications. The patient was then transferred to North Carolina Baptist Hospital. On arrival she was comatose and being ventilated with a resuscitation bag. The temperature was 34.5°C, pulse 110/minute and blood pressure 110/70 mmHg. There was no evidence of trauma. There were no spontaneous movements and no responses to voice or deep pain. The pupils were 4 mm in diameter and weakly responsive to light. Funduscopic examination was normal. Doll's-head eye movements were absent. Deep tendon reflexes were 3+ and symmetrical. The plantar reflexes were flexor. The remainder of the physical examination was unremarkable.

Laboratory studies revealed Hb 14 g/dl, Hct 40 Vol%, WBC 10,000/mm^3 and platelets 190,000/mm^3. The prothrombin and partial thromboplastin times were normal. The serum sodium was 139 mEq/l, potassium 3.7 mEq/l, chloride 106 mEq/l, total CO_2 22 mEq/l, BUN 7 mg/dl, creatinine 0.7 mg/dl, glucose 260 mg/dl, calcium 8.6 mg/dl, inorganic phosphate 3.2 mg/dl and uric acid 2.8 mg/dl. The urine was brown with a pH of 6, specific gravity 1.020, 1+ protein, and 4+ orthotolidine test. The urinary sediment contained 0-1 red blood cells/hpf, 0-1 white blood cells/hpf and no bacteria. The serum creatinine phosphokinase (CPK) was 29,400 mU/ml, lactate dehydrogenase (LDH) 795 U/l, glutamine-oxaloacetic transaminase (SGOT) 359 U/l and myoglobin (radioimmunoassay) 42,700 ng/ml (normal < 84 ng/ml). A urinary toxicology screen was positive only for lorazepam, perphenazine and amitriptyline. There was no ethanol in the blood. An arterial blood gas determination with the patient breathing 100% oxygen showed pH 7.31, PO_2 313 mm Hg, PCO_2 44 mm Hg and calculated bicarbonate 22 mEq/l. A chest x-ray was normal. An electrocardiogram (EKG) showed sinus tachycardia with a normal QRS duration.

Initial therapy included mechanical ventilation, a warming blanket and 20g activated charcoal via nasogastric tube every four hours. The urine output was initially 15-20 cc/hr. The urine osmolality was 630 mOsm/kg and the fractional excretion of sodium was 0.1%. Infusions of 0.9% saline (400 ml/hr) and a solution of 25 g mannitol and 100 mEq sodium bicarbonate in 1 liter D_5W (250 ml/hr) were begun and within four hours the blood pressure rose to 130/80 mmHg and the urine output increased to 150 cc/hr. During the next 72 hours the patient's sen-

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sorium returned to normal and she was weaned from mechanical ventilation. Azotemia, hyperkalemia, hypocalcemia, hyperphosphatemia or hyperuricemia did not occur. The CPK began to fall, but diffuse myalgias persisted for seven days.

DISCUSSION

The elevated serum levels of myoglobin, CPK, LDH, and SGOT as well as a strongly orthotolidine positive urine in the absence of hematuria all indicate that this patient had rhabdomyolysis. Although oliguria was present at first, acute renal failure did not develop, possibly because of the administration of the mannitol-bicarbonate solution. Although a recent study suggested that this regimen is of value in preventing acute renal failure in some patients with rhabdomyolysis,[2] its efficacy has not been demonstrated in a controlled study. Other common complications of acute rhabdomyolysis such as hyperkalemia, hypocalcemia, hyperphosphatemia, hyperuricemia, and disseminated intravascular coagulation did not occur in our patient.

Table 1 lists common causes of acute rhabdomyolysis. Psychotropic and sedative drugs associated with the development of acute rhabdomyolysis include heroin, amphetamines, barbiturates, methadone, glutethimide, diazepam, codeine, phencyclidine and loxapine.[1,3–5] Since these drugs are not intrinsically myotoxic, the mechanism by which they cause acute rhabdomyolysis is not clear. Seizures, hypothermia, hypotension, acidosis, anoxia and prolonged coma and immobilization in one position with either direct muscle compression or occlusion of regional blood supply have been postulated as pathogenetic factors in overdose-associated acute rhabdomyolysis.[4]

TABLE I Common Causes of Acute Rhabdomyolysis

1. Primary Muscle Injury—myositis, trauma, crush injuries, burns.
2. Drug Overdoses—especially sedative drugs resulting in coma and immobilization.
3. Metabolic—inherited muscle enzyme deficiencies, hypokalemia, hypophosphatemia, diabetic ketoacidosis, ethanol intoxication.
4. States of Increased Energy Consumption—exercise (particularly in unconditioned individuals), convulsions, delerium tremens, fever, heat stroke, high voltage shock.
5. Systemic Infection.
6. Decreased Blood Flow to Muscle—shock, arterial embolism.

We can now include lorazepam, perphenazine and amitriptyline among the drugs associated with acute rhabdomyolysis. Since it appears that overdoses of all the major classes of psychotropic and sedative drugs may be associated with acute rhabdomyolysis we suggest that all patients with suspected drug overdoses have a careful urinalysis and a determination of serum CPK, particularly if they are oliguric. Prompt recognition of acute rhabdomyolysis will allow the physician to better anticipate and possibly prevent the development of the life threatening renal and electrolyte disturbances which may complicate this condition.

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SPECIAL ARTICLE

Sexually Transmitted Diseases: Treatment Guidelines-Part II

TRICHOMONIASIS

Recommended Regimen

Metronidazole: 2.0 g, by mouth, in a single dose.

Alternative Regimen

Metronidazole may be administered in a dosage of 250 mg, by mouth, 3 times a day for 7 days.

Asymptomatic Women

Asymptomatic women with trichomoniasis should be treated the same as symptomatic women.

Management of Sexual Partners

Male sexual partners of women with trichomoniasis should be treated with metronidazole 2.0 g, by mouth, in a single dose and examined for coexistent STD.

Follow-up

Tests of cure should be sought whenever possible. Resistance of *Trichomonas vaginalis* to metronidazole has been observed, but is rare.

Trichomoniasis in Pregnancy

Metronidazole is contraindicated in the first trimester of pregnancy and should be avoided throughout pregnancy. Clotrimazole 100 mg, intravaginally, at bedtime for 7 days may produce symptomatic improvement and some cures. Other local treatments may be used for symptomatic relief but have low cure rates. Lactating women may be treated with metronidazole 2.0 g, by mouth, in a single dose, but breast-feeding should be interrupted for at least 24 hours after therapy.

Neonatal Trichomonal Infections

Infants with symptomatic trichomoniasis or with persistent urogenital trichomonal colonization beyond the fourth week of life can be treated with metronidazole 10-30 mg/kg daily for 5-8 days.

GENITAL HERPES SIMPLEX VIRUS INFECTIONS

Genital herpes infection is a viral disease that may be chronic and recurring and for which there is no known cure.

First Clinical Episode

A careful history should be obtained to establish that this is the patient's first disease episode.

Clinicians may elect to use:

Acyclovir ointment 5%: Apply sufficient quantity to adequately cover all lesions every 3 hours, 6 times a day for 7 days. Therapy should be initiated as early as possible following onset of signs and symptoms.

This treatment reduces viral shedding and the duration of disease in patients with primary initial infection who are treated within 6 days of the onset of symptoms; however, it does not prevent recurrences.

Acyclovir has not been tested in pregnant or lactating women.

Recurring Disease

There is no effective treatment to prevent recurrences of genital herpes infection or to shorten their duration.

Patients should be told about the natural history of genital herpes infection and advised to abstain from sexual contact while lesions are present. The risk of transmission of the herpes virus during asymptomatic periods is unknown. Some consultants recommend that asymptomatic patients use condoms, but their efficacy is unproved. Women with genital herpes infection should be advised to have yearly Pap tests. Early in pregnancy, women should inform their clinician of their history of genital herpes infection.

ANO-GENITAL WARTS (Condylomata acuminata)

The treatment of ano-genital warts has not been well studied. No treatment is completely satisfactory. Ano-genital warts have recently been linked to the development of cancer. For these reasons, atypical or persistent warts should be biopsied. A Pap smear is recommended for all women with ano-genital warts. Women with cervical warts should not be treated until the result of the Pap smear is available to guide therapy. While podophyllin is widely used in the treatment of ano-genital warts, some consultants feel that cryotherapy, when available, may be preferable to podophyllin.

External Genital/Perianal Warts

Podophyllin: 10%-25% in compound tincture of benzoin. Apply carefully to wart, avoiding normal tissue. Wash off thoroughly in 1-4 hours. If the wart does not regress

after 4 weekly applications, alternative treatments may be used.

Podophyllin should not be used during pregnancy.

Alternative therapies: Cryotherapy (e.g., liquid nitrogen, solid carbon dioxide)

Electrosurgery

Surgical removal (scissor or curette)

Vaginal/Cervical Warts

Cervical warts: Most consultants recommend against the use of podophyllin for cervical warts.

Vaginal warts: May be treated with the regimen below:

Podophyllin: 10%-25% in compound tincture of benzoin, may be used for vaginal warts only if great care is taken to ensure that the treated area is dried before removing the speculum. Because podophyllin is absorbed and is toxic, use of large amounts should be avoided.

Alternative therapies: Same as for external genital/perianal warts.

Urethral/Meatal Warts

Accessible meatal warts: May be treated with the regimen below:

Podophyllin: 10%-25% in compound tincture of benzoin (see above). Great care should be taken to ensure that the treated area is dried before contact with normal mucosa is allowed.

Alternative therapies: Same as for external genital/perianal warts

Urethral Warts: Intraurethral warts should be suspected in men with recurrent meatal warts. Urethroscopy is necessary to diagnose this condition. Intraurethral 5% 5-fluorouracil or thiotepa may be effective in this condition, but neither has been adequately evaluated. Podophyllin should not be used.

Anorectal Warts

Many consultants avoid the use of podophyllin for anorectal warts.

Podophyllin: 10%-25% in compound tincture of benzoin may be used to treat anorectal warts accessible by anoscope. Extreme care must be taken to avoid exposure of normal mucosa to podophyllin. Allow the treated area to dry before removal of the anoscope.

Alternative therapies: Same as for external genital/perianal warts

Patients with extensive or proximal anorectal warts should be referred for proctologic evaluation.

Oral Warts

Oral warts should be treated with:

Cryotherapy (e.g., liquid nitrogen, solid carbon dioxide)

Electrosurgery

Surgical removal (scissor or curette)

SYPHILIS

Early Syphilis

Recommended Regimen

Early syphilis (primary, secondary, latent syphilis of less than 1 year's duration) should be treated with:

Benzathine penicillin G: 2.4 million units total, IM, at a single session

Penicillin-Allergic Patients

Patients who are allergic to penicillin should be treated with:

Tetracycline HCl: 500 mg, by mouth, 4 times a day for 15 days

Tetracycline appears to be effective, but has been evaluated less extensively than penicillin. Patient compliance with this regimen may be difficult, so care should be taken to encourage optimal compliance.

Penicillin-allergic patients who cannot tolerate tetracycline should have their allergy confirmed. For these patients there are 2 options:

1. If compliance and serologic follow-up can be assured, administer erythromycin 500 mg, by mouth, 4 times a day for 15 days.

2. If compliance and serologic follow-up cannot be assured, the patient should be managed in consultation with an expert.

Syphilis of More Than One Year's Duration

Recommended Regimen

Syphilis of more than 1 year's duration, except neurosyphilis (latent syphilis of indeterminate or more than 1 year's duration, cardiovascular, or late benign syphilis) should be treated with:

Benzathine penicillin G: 2.4 million units, IM, once a week for 3 successive weeks (7.2 million units total)

The optimal treatment schedules for syphilis of greater than 1 year's duration have been less well established than schedules for early syphilis. In general, syphilis of longer duration requires more prolonged therapy.

Therapy is recommended for established cardiovascular syphilis. Antibiotics may not reverse the pathology associated with this disease, however.

Penicillin-Allergic Patients

There are no published clinical data that adequately document the efficacy of drugs other than penicillin for syphilis of more than 1 year's duration. Cerebrospinal fluid examinations should be performed before therapy with these regimens.

Patients who are allergic to penicillin should be treated with:

Tetracycline HCl: 500 mg, by mouth, 4 times a day for 30 days. Patient compliance with this regimen may be difficult, so care should be taken to encourage optimal compliance.

Penicillin-allergic patients who cannot tolerate tetracycline should have their allergy confirmed. For these patients there are 2 options:

1. If compliance and serologic follow-up can be assured, administer erythromycin 500 mg, by mouth, 4 times a day for 30 days.

2. If compliance and serologic follow-up cannot be assured, the patient should be hospitalized and managed in consultation with an expert.

Cerebrospinal Fluid Examination

Cerebrospinal fluid (CSF) examination should be done for patients with clinical symptoms or signs consistent with neurosyphilis. This examination is also desirable for other patients with syphilis of greater than 1 year's duration to exclude asymptomatic neurosyphilis.

Neurosyphilis

Published studies show that a total dose of 6.0-9.0 million units of penicillin G over a 3- to 4-week period results in a satisfactory clinical response in approximately 90% of patients with neurosyphilis. This information must be considered along with the observation that regimens employing benzathine

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1. National interagency Council on Smoking and Health. *The Smoking D*
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TABLETS

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penicillin or procaine penicillin in doses under 2.4 million units daily do not consistently provide treponemicidal levels of penicillin in CSF, and with the knowledge that several case reports show the failure of such regimens to cure neurosyphilis.

Drug Regimens

Potentially effective regimens, none of which have been adequately studied, include:

Aqueous crystalline penicillin G: 12-24 million units, IV, per day (2-4 million units every 4 hours) for 10 days, followed by benzathine penicillin G, 2.4 million units, IM, weekly for 3 doses

OR

Aqueous procaine penicillin G: 2.4 million units, IM, daily plus probenecid 500 mg, by mouth, 4 times a day, both for 10 days, followed by benzathine penicillin G 2.4 million units, IM, weekly for 3 doses

OR

Benzathine penicillin G: 2.4 million units, IM, weekly for 3 doses

Penicillin-Allergic Patients

Patients with histories of allergy to penicillin should have their allergy confirmed and managed in consultation with an expert.

Syphilis in Pregnancy

Evaluation of Pregnant Women

All pregnant women should have a nontreponemal serologic test for syphilis, such as the VDRL or RPR test, at the time of the first prenatal visit. The treponemal tests such as the FTA-ABS test should not be used for routine screening. For women suspected of being at high risk for syphilis, a second nontreponemal test should be done during the third trimester, and the cord blood should be tested for syphilis antibody.

Seroreactive patients should be expeditiously evaluated. This evaluation should include a history and physical examination, as well as a quantitative nontreponemal test and a confirmatory treponemal test.

If the FTA-ABS test is nonreactive and there is no clinical evidence of syphilis, treatment may be withheld. Both the quantitative nontreponemal test and the confirmatory test should be repeated within 4 weeks. If there is clinical or serologic evidence of syphilis or if the diagnosis of syphilis cannot be excluded with reasonable certainty, the patient should be treated as outlined below.

Patients for whom there is documentation of adequate treatment for syphilis in the past need not be treated again unless there is clinical or serologic evidence of reinfection such as dark-field-positive lesions or a 4-fold rise in titer when a quantitative nontreponemal test is used.

Recommended Regimens

For patients at all stages of pregnancy who are not allergic to penicillin, penicillin should be used in dosage schedules appropriate for the stage of syphilis as recommended for the treatment of nonpregnant patients.

Penicillin-Allergic Patients

For patients at all stages of pregnancy who have documented allergy to penicillin:

1. If compliance and serologic follow-up can be assured, administer erythromycin in dosage schedules appropriate for the stage of syphilis as recommended for the treatment of nonpregnant patients. Infants born to mothers treated during pregnancy with erythromycin for early syphilis should be treated with penicillin.

2. If compliance and serologic follow-up cannot be assured, the patient should be hospitalized and managed in consultation with an expert.

Tetracycline is not recommended in pregnant women because of potential adverse effects on the fetus.

Follow-up

Pregnant women who have been treated for syphilis should have monthly quantitative nontreponemal serologic tests for the remainder of the current pregnancy. Women who show a 4-fold rise in titer should be treated again. After delivery, follow-up is as outlined for nonpregnant patients.

Congenital Syphilis

Congenital syphilis may occur if

the mother has syphilis during pregnancy. If the mother has received adequate penicillin treatment during pregnancy, the risk to the infant is minimal. However, all infants should be examined carefully at birth and at frequent intervals thereafter until nontreponemal serologic tests are negative.

Infected infants are frequently asymptomatic at birth and may be seronegative if the maternal infection occurred late in gestation. Infants should be treated at birth if maternal treatment was inadequate, unknown, or with drugs other than penicillin, or if adequate follow-up of the infant cannot be ensured.

Infants with congenital syphilis should have a CSF examination before treatment.

Symptomatic Infants or Asymptomatic Infants with Abnormal Cerebrospinal Fluid

Aqueous crystalline penicillin G: 50,000 units/kg, IM or IV, daily in 2 divided doses for a minimum of 10 days

OR

Aqueous procaine penicillin G: 50,000 units/kg, IM, daily for a minimum of 10 days

Asymptomatic Infants with Normal Cerebrospinal Fluid

Benzathine penicillin G: 50,000 units/kg, IM, in a single dose

Although benzathine penicillin has been previously recommended and widely used, published clinical data on its efficacy in congenital neurosyphilis are lacking. If neurosyphilis cannot be excluded, the aqueous crystalline or procaine penicillin regimen is recommended. Only penicillin regimens are recommended for neonatal congenital syphilis.

After the neonatal period, penicillin therapy for congenital syphilis should be with the same dosages used for neonatal congenital syphilis. For larger children the total dose of penicillin need not exceed the dosage used in adult syphilis of more than 1 year's duration. After the neonatal period, the dosage period, the dosage of tetracycline for congenital syphilis in patients who are allergic to penicillin should be individualized but need not exceed dosages used in adult syphilis of more than one year's duration. Tetracycline should not be given to children less than 8 years of age.

Follow-up After Treatment and Re-Treatment

All patients with early syphilis and congenital syphilis should be encouraged to return for repeat quantitative nontreponemal tests at least 3, 6, and 12 months after treatment. For these patients quantitative nontreponemal tests will decline to nonreactive or to reactive with a low titer within a year following successful treatment with benzathine penicillin G. Titers decline more slowly with serologic tests for patients treated for disease of longer duration. Patients with syphilis of more than 1 year's duration should also have a repeat serologic test 24 months after treatment. Careful follow-up serologic testing is particularly important in patients treated with antibiotics other than penicillin. Examination of CSF should be planned as part of the last follow-up visit after treatment with alternative antibiotics.

All patients with neurosyphilis must be carefully followed with periodic serologic testing, clinical evaluation at 6-month intervals, and repeat CSF examinations for at least 3 years.

The possibility of reinfection should always be considered when patients with early syphilis need to be treated a second time. A CSF examination should be performed before re-treatment unless reinfection and a diagnosis of early syphilis can be established.

Re-treatment should be considered when:

1. Clinical signs or symptoms of syphilis persist or recur
2. There is a 4-fold increase in titer with a nontreponemal test
3. A nontreponemal test showing a high titer initially fails to show 4-fold decrease within a year

Patients should be re-treated according to the schedules recommended for syphilis of more than 1 year's duration. In general, a patient should be re-treated only once since patients may maintain stable, low titers when nontreponemal tests are used or may have irreversible anatomical damage.

Epidemiologic Treatment

Persons who have been exposed to infectious syphilis within the preceding 3 months and other persons who on epidemiologic grounds are at high risk for early syphilis should be treated as for early syphilis. Every effort should be made to determine if such persons have syphilis.

Toxic Encounters of the Dangerous Kind

AHA!!, THE SMELL OF BITTER ALMONDS . . . . CYANIDE POISONING

No question about it, anyone old enough to be a health care professional must have their imagination button activated by the sound of the words — **cyanide poisoning**. Many images can be conjured up by this term — fiction and non-fiction . . . the detective, private or otherwise, who enters the scene wearing a dark fedora hat and a trench coat (he wears other clothes underneath of course). He approaches the recent decedent, smells the area around the victim's face and pronounces — "bitter almonds — cyanide poisoning of course." Or how about the captured spy or the Nazi officer on trial who escapes the hangman's noose or firing squad by biting down on a capsule or cyanide sequestered in the mouth.

The execution of prisoners convicted of capital crimes in this country via the "gas chamber" certainly evokes strong images. This form of vengeance by a government is nothing new—it was used quite effectively by the ancient Egyptians and then the ancient Romans; not death by gas chamber of course, but death by cyanide nonetheless. My favorite cyanide story, albeit a sick one, involves the Swedish chemist Karl Scheele who in 1786 was the first to synthesize HCN (hydrogen cyanide). One day while attempting to prove HCN's toxicity, he accidentally dropped a flask of the dumb stuff and much to the horror of his lab assistants died almost instantly in a cloud of HCN gas. He thus proved to everyone but himself that it was lethal — unless he was a very quick study.

Why an article on cyanide poisoning? Most of us have never seen a patient with this entity and probably believe we never will. However, the truth is that not all victims of cyanide intoxication die within minutes — some could be saved if recognized and promptly treated. Cyanides are fairly ubiquitous in our environment — from the natural sources such as chokecherry pits, apricot seeds, peach stones, and apple pits to the widespread usage of cyanide derivatives in industry where it is used as a fumigant and in metal cleaning, in electroplating, in soil fertilization and so on. A cyanogenic substance, **sodium** nitroprusside, is used in treatment of severe hypertension. Cyanides are used in the clandestine manufacture of PCP (phencyclidine) as if this stuff isn't bad already. Cyanides are produced in many modern major fires where the burning of wool, silk, nylon, polyurethane, paper and polyacrylnitrile releases hydrogen cyanide (i.e., whenever modern upholstery fabrics are burned); this probably accounts for many of the deaths at the fire site for which a specific diagnosis is never made. Perhaps the most unnecessary source of potential cyanide poisoning victims occurs because of the widespread availability of the "unmagic bullet" laetrile. This mess, AKA amygdalin, is alleged to be useless according to the National Cancer Institutes report,[1] but, in fact, is worse than useless — it can cause cyanide poisoning and thus violates *primum no nocere*. It can also cause cyanide poisoning in small children who accidentally get into a relative's laetrile.

Cyanide poisoning can occur via inhalation (where death can occur within minutes) or ingestion or through skin or mucous membrane absorption (where death may not occur for 3-4 hours). It is therefore possible at least for us to be confronted by a patient with cyanide poisoning even though it is not something we can expect frequently in our practices. There are many clinical features but the major body systems involved acutely are the CNS, GI, respiratory and cardiovascular producing such findings as: severe headache, vertigo, syncope, lethargy, seizures, paralysis and coma, and, if ingested, burning tongue and oral mucosa, tachypnea and dyspnea and then rapid slowing of respiration (cyanosis is a late finding), hypertension, and bradycardia, initially with ventricular dysrhythmia followed by hypotension, tachycardia, and QRS changes, and, of course, the quintessential clinical feature — **death.**

Certainly none of these features is pathognomonic, so how can you make a diagnosis without a good history of exposure, when time is truly of the essence? Well, believe it or not, the odor of bitter almonds (or peach pits) is still considered diagnostic. No one is entirely sure what causes this peculiar musty odor; most probably it is caused by hydrogen cyanide. Not everyone can detect the odor of bitter almonds, however; it is believed to be a sex-linked recessive characteristic. The literature states that about 20%-40% of people can not detect the odor and that males are worse than females in terms of possessing this defect (3:1 male to female ratio). In addition to the characteristic odor, the patient presents with the clinical picture of **CNS impairment, tachypnea, shock, metabolic acidosis, no cyanosis** and bright red blood samples — hardly a classic picture of anything and only present in the early phases of cyanide poisoning.

Cyanide is unquestionably bad news as a poison. No matter how cyanide enters the body the method of toxicity is the same — cellular protoplasm is poisoned because cyanide combines with cytochrome oxidase and inhibits this enzyme's activity in cellular oxygen use. The final result is **cellular hypoxia.**

To me, this poison is fascinating and the treatment is even more so. Treatment in this country has not changed for decades and it involves producing another disease — **methemoglobinemia.** In the U.S. the current

(and past) treatment of cyanide poisoning utilizes the Lilly cyanide poisoning kit which should be available in every emergency room and supplies should be current. Once you decide that your patient may have been poisoned by cyanide you must act quickly; **do not at this point** empty the stomach of the patient, get megasamples of blood for analysis, etc. Instead ventilate the patient with 100% O_2 and at the same time place **amyl nitrite** pearls under the patient's nose (break the pearls first, of course!!). Then as soon as it is available inject **sodium nitrite** intravenously and discontinue the amyl nitrite pearls. Nitrites induce a state of methemoglobinemia which decreases cyanide by forming cyanomethemoglobin. Cyanide thus attaches to the methemoglobin and frees the cytochrome oxidase so the cell can "breathe" again. After nitrites are given, **sodium thiosulfate** is administered intravenously. This drug picks up cyanide ions and produces a relatively non-toxic product, thiocyanate, which is excreted in the urine. Once the patient is stabilized the stomach can be emptied (if the poisoning was by ingestion) and the gastric mucosa "washed" with an oxidizing agent such as sodium thiosulfate or dilute H_2O_2.

The Europeans, especially the French, believe that we are unbalanced for still using the Lilly method. Their argument goes something like this: Why create one disease to cure another? They use Kelocyanor which is a cobalt-EDTA product that chelates the cyanide, but does not produce methemoglobinemia and works rapidly. At the present time it is not approved by the FDA, more's the pity.

[This article was written prior to the Extra Strength Tylenol - cyanide fiasco; this provides some justification for the reason I wrote the article in the first place. The point is — with a poison as bizarre and deadly as cyanide, you just never know when you will need to know how to recognize and treat this toxic encounter — in a hurry.]

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Dean's Page

IS NORTH CAROLINA EDUCATING TOO MANY PHYSICIANS?

Stuart Bondurant, M.D.
Dean, School of Medicine
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Stuart Bondurant, M.D.

As I visit around the state I am impressed that many thoughtful physicians and others are concerned about possible consequences of a surplus of physicians. The concern stems in part, I believe, from direct observation in several communities of the state where there is evidence of satiation and in part from public discussion of projections such as those of the GMENAC (Graduate Medical Education National Advisory Committe) Report which predicted a large national surplus of physicians in 1990 and an even larger one in the year 2000.

There is certainly convincing evidence that the nation as a whole and North Carolina in particular have already moved far toward correcting the physician shortage of the 1950s and 1960s and it is highly unlikely that being "over-doctored" will improve the quality or lower the cost of care for our patients.

For my own part, I remain quite unconvinced by the national projections of the GMENAC Report because these projections considerably exceed the limits within which the techniques of projections are accurate.

But regardless of the foregoing, I would like to put forth here for comment and criticism the notion that regardless of national projections, North Carolina is not educating too many physicians. Rather, it seems to me that we are educating about the right number of physicians in North Carolina and that, if anything, too few North Carolinians are going into medicine. If there is to be a surplus of physicians in North Carolina, it is due to in-migration of physicians from other states and countries. Reducing the positions in North Carolina's medical schools would, if anything, increase the inflow of physicians while even further reducing the access of sons and daughters of North Carolina to medical education. Let me present some facts which underlie these conclusions: Last fall (1981), there were just 307 North Carolinians who entered medical school in all schools in the United States (280 in schools in North Carolina and 27 in schools in other states).[1] Now if all of those students graduate and practice for 30 years and if each year for the next 30 years a class of 300 enters, graduates and practices, North Carolina would have contributed, in 30 years, 9,000 physicians to the total national pool. Since there are presently approximately 9,000 physicians practicing in North Carolina, we are not currently producing a future surplus from among North Carolinians, but rather we are almost exactly replacing current N.C. physicians with North Carolina residents going to medical school.

The total number of current graduates of all four North Carolina medical schools (approximately 420 per year)[1], if continued for 30 years, would provide a pool of 12,000 physicians, an increase of about 33% over the current number. But conservative population projections anticipate that the population of North Carolina will grow by at least 35% over the next 30 years[2] so that the total output of physicians from N.C. medical schools will just about or not quite keep up with the expected growth of population.

Of course many graduates of N.C. medical schools will settle in other states, but it appears that there will be a surplus of physicians in N.C. only if more graduates of non-North Carolina medical schools enter the state than the number of graduates of N.C. schools settling in other states. If the foregoing is correct, a surplus of physicians in N.C. can only occur through in-migration of physicians educated in other states and nations.

In addition to their responsibility for educating physicians for the state and nation, North Carolina medical schools have a responsibility to provide access to careers in medicine for young men and women of North Carolina. At present proportionately fewer North Carolinians are entering medical schools than residents of most other states. Among the fifty states, North Carolina ranks 43rd in the number of its residents entering medical schools per 100,000 population and North Carolina ranks 41st in the number of its residents entering medical school per 1,000 bachelors degrees awarded.[1]

In conclusion, it seems that North Carolina medical schools are now educating approximately the correct number of physicians for the state while access of North Carolinians to medical education is below the national average. If these observations and conclusions are correct, there appears to be no reasonable basis for reducing the size of the medical schools or otherwise reducing access of North Carolinians to careers in medicine.

One possible useful action might be the reduction in the size of medical schools in those states which are over-producing. Some states are said to have knowingly declined to do this on the basis that they must over produce in order to retain sufficient numbers of physicians while a number of schools in other states did in fact reduce the size of their classes in 1982.

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THE PHYSICIAN IN THE MARKETPLACE

Many among us have been concerned about what Behrman[1] has recently described as the erosion of the professional image, a concern which might sensibly lead us to explore the evolution of the professions themselves and of medicine in particular. If our inquiry is to be in any way productive, we must try to see ourselves as others see us, displacing our focus from the mirror. We of course are aware that we have negotiated the traditional rite of passage of those expected to serve through the application of special knowledge, gained in a rigorous apprenticeship, secluded from the marketplace. We too know that through the ages we have been jeered at, satirized, condemned as well as praised. Moliere, Shaw, Chaucer, for example, have found us easy targets and the pompous physician has been a favorite of the comic, and not-so comic, artist since medieval times.

Perhaps our public, our targeted segment according to McLaughlin and Littlefield,[2] appreciates better than we the conflicts between our professed altruism and our affluence, even between our words and our deeds. But because we need each other, we and our markets, we cultivate this relationship as assiduously as possible. We do certainly offer secret knowledge, often lifesaving, and solace for the worried well, sometimes too much on our own terms, sometimes without truly satisfying either of us.

Through the centuries, since we were first recognized, or claimed to be, in our primitive image, magician, witch doctor or practical therapist, we have sought both to maintain the advantages provided by our secret knowledge and to establish and maintain standards to protect our patients. In modern America, however, we have been thrust into the marketplace, efforts to maintain standards attacked, more than ever before by a literate populace, by theorists — supply-siders, monetarists, Democrats, Republicans, libertarians, Marxists, what have you — and by the Federal Trade Commission. We have qualified as we might have anticipated in a capitalistic society as economic man. We have a product, defined as health, to be marketed for consumers, and therefore are eligible to be advised about entering and cultivating the free market.

We now have hospital chains, corporate practice, cooperative practice, HMOs — the list is infinite. Health services take up about 10% of the gross national product, one of the hallowed phrases of planners and projectors. It is quite reasonable for the *Journal* then to offer in this issue McLaughlin and Littlefield's advise about marketing practice in medicine, so that we may see how some others see us.

J.H.F.

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THE ROAD TO OBLIVION

In a recent review, Gabow and her colleagues, in defining the spectrum of rhabdomyolysis, cited 181 references and listed 69 causes of the condition in 10 separate categories, a rather imposing compilation. What we do to ourselves seems to be most important, alcoholism being one of, if not *the*, most common etiologic factors. For those of us brought up associating such a lesion primarily with crush injury[2] and red or rose wine or cola colored urine without hematuria, an adjustment of diagnostic perspective is necessary. We know of course that excessive muscle activity* as in status epilepticus and in all day conga drumming can be seriously damaging to muscle but we must also appreciate that immobility whether from a drunken stupor or overdose can be equally dangerous. The report by Caruana et al[3] in this issue of the *Journal* gives ample confirmation of the danger of overdose no matter the agent and testifies yet again that chance favors the prepared mind, else this patient might have suffered serious renal injury. While most attention has been paid to abuse of street drugs — heroin, phencyclidine (angel dust), and the amphetamines, the nepenthes** dispensed on prescription — the phenothiazines, benzodiazepines and tricyclic antidepressants are dangerous too.

J.H.F.

*Gabow et al strangely classify conga drumming as a contact sport, presumably because the hand hits the drum, and marathon running, where the foot hits the ground, as a non-contact sport. Presumably one contacts the artificial, the drum, but not the natural, the earth.

**A potion or drug used by the ancients to drown pain and sorrow; hence, anything causing oblivion.

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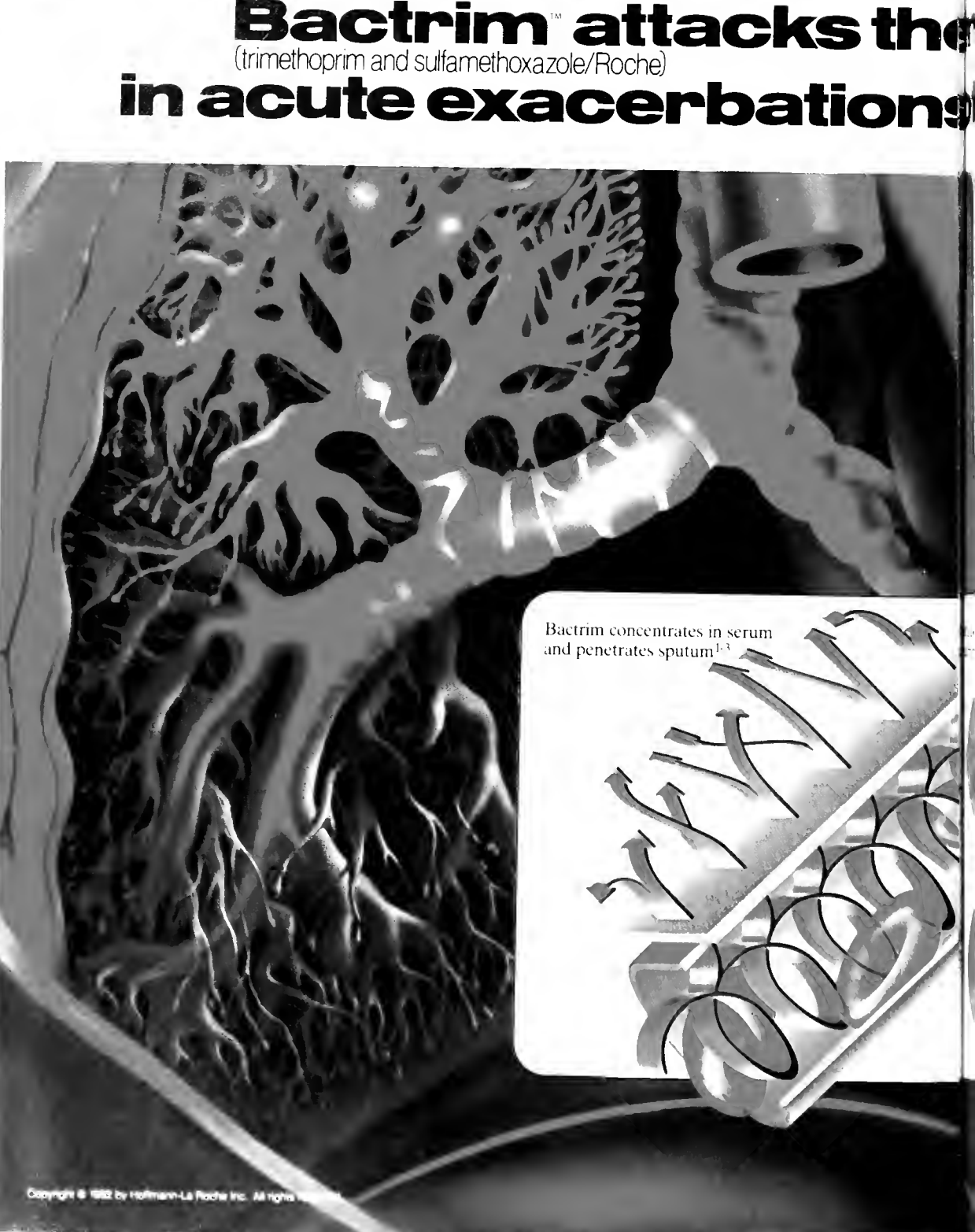

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Bactrim clears sputum of susceptible bacteria

In sputum cultures from patients with acute exacerbations of chronic bronchitis, *H. influenzae* and *S. pneumoniae* are isolated more often than any other pathogens.[4,5] One study of transtracheal aspirates from 76 patients with acute exacerbations found that 80% of the isolates were of these two pathogens.[5]

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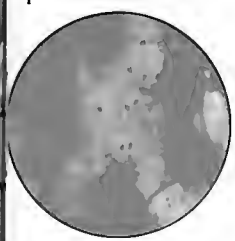
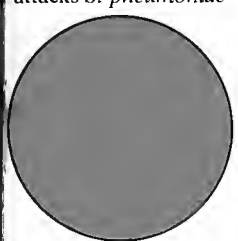
acks *H. influenzae*—even
mpicillin-resistant strains



attacks *S. pneumoniae*



Bactrim reduces coughing and sputum production

In three double-blind comparisons with ampicillin *q.i.d.*, Bactrim DS proved equally effective on all clinical parameters.[7-9] Bactrim reduced the frequency and severity of coughing, reduced the amount of sputum produced and cleared the sputum of purulence.

Bactrim has the added advantages of *b.i.d.* dosage convenience and a lower incidence of diarrhea than with ampicillin, and it is useful in patients allergic to penicillins.

Bactrim also proved more effective than tetracyclines in 10 clinical trials involving nearly 700 patients.[10] Overall clinical condition of the patients, changes in sputum purulence, reduction in sputum volume and microbiological clearance of pathogens—all improved more with Bactrim therapy than with tetracyclines. G.I. side effects occurred in only 7% of patients treated with Bactrim compared with 12% of tetracycline-treated patients. (See Adverse Reactions in summary of product information on next page.)

Bactrim is contraindicated in pregnancy at term and nursing mothers, infants under two months of age, documented megaloblastic anemia due to folate deficiency and hypersensitivity.

Bactrim DS. For acute exacerbations of chronic bronchitis in adults* when it offers an advantage over single-agent antibacterials.

References: 1. Hughes DTD, Bye A, Hodder P: *Adv Antimicrob Antineoplastic Chemother 1/2*:1105-1106, 1971. **2.** Jordan GW *et al: Can Med Assoc J 112*:91S-95S, Jun 14, 1975. **3.** Beck H, Pechere JC: *Prog Antimicrob Anticancer Chemother 1*:663-667, 1969. **4.** Quintiliani R: Microbiological and therapeutic considerations in exacerbations of chronic bronchitis, in *Chronic Bronchitis and Its Acute Exacerbations: Current Diagnostic and Therapeutic Concepts;* Princeton Junction, NJ, Communications Media for Education, Inc., 1980, pp. 9-12. **5.** Schreiner A *et al: Infection 6*(2):54-56, 1978. **6.** Data on file, Hoffmann-La Roche Inc., Nutley, NJ. **7.** Chodosh S: Treatment of acute exacerbations of chronic bronchitis: results of a double-blind crossover clinical trial, in *Chronic Bronchitis and Its Acute Exacerbations: Current Diagnostic and Therapeutic Concepts. Op. cit.*, pp. 15-16. **8.** Chervinsky P: Double-blind clinical comparisons between trimethoprim-sulfamethoxazole (Bactrim™) and ampicillin in the treatment of bronchitic exacerbations. *Ibid.*, pp. 17-18. **9.** Dulfano MJ: Trimethoprim-sulfamethoxazole vs. ampicillin in the treatment of exacerbations of chronic bronchitis. *Ibid.*, pp. 19-20. **10.** Medici TC: Trimethoprim-sulfamethoxazole (Bactrim™) in treating acute exacerbations of chronic bronchitis: summary of European clinical experience. *Ibid.*, pp. 13-14.

Economical b.i.d.

Bactrim™ DS

(160 mg trimethoprim and 800 mg sulfamethoxazole/Roche)

*Due to susceptible organisms. **Please see next page for summary of product information.**

Bactrim™

(trimethoprim and sulfamethoxazole/Roche)

Before prescribing, please consult complete product information, a summary of which follows:

Indications and Usage: For the treatment of urinary tract infections due to susceptible strains of the following organisms: *Escherichia coli, Klebsiella-Enterobacter, Proteus mirabilis, Proteus vulgaris, Proteus morganii.* It is recommended that initial episodes of uncomplicated urinary tract infections be treated with a single effective antibacterial agent rather than the combination. *Note* The increasing frequency of resistant organisms limits the usefulness of all antibacterials, especially in these urinary tract infections.

For acute otitis media in children due to susceptible strains of *Haemophilus influenzae* or *Streptococcus pneumoniae* when in physician's judgment it offers an advantage over other antimicrobials. To date, there are limited data on the safety of repeated use of Bactrim in children under two years of age. Bactrim is not indicated for prophylactic or prolonged administration in otitis media at any age.

For acute exacerbations of chronic bronchitis in adults due to susceptible strains of *Haemophilus influenzae* or *Streptococcus pneumoniae* when in physician's judgment it offers an advantage over a single antimicrobial agent.

For enteritis due to susceptible strains of *Shigella flexneri* and *Shigella sonnei* when antibacterial therapy is indicated.

Also for the treatment of documented *Pneumocystis carinii* pneumonitis.

Contraindications: Hypersensitivity to trimethoprim or sulfonamides; patients with documented megaloblastic anemia due to folate deficiency, pregnancy at term, nursing mothers because sulfonamides are excreted in human milk and may cause kernicterus, infants less than 2 months of age

Warnings: BACTRIM SHOULD NOT BE USED TO TREAT STREPTOCOCCAL PHARYNGITIS. Clinical studies show that patients with group A β-hemolytic streptococcal tonsillopharyngitis have higher incidence of bacteriologic failure when treated with Bactrim than do those treated with penicillin. Deaths from hypersensitivity reactions, agranulocytosis, aplastic anemia and other blood dyscrasias have been associated with sulfonamides Experience with trimethoprim is much more limited but occasional interference with hematopoiesis has been reported as well as an increased incidence of thrombopenia with purpura in elderly patients on certain diuretics, primarily thiazides Sore throat, fever, pallor, purpura or jaundice may be early signs of serious blood disorders Frequent CBC's are recommended; therapy should be discontinued if a significantly reduced count of any formed blood element is noted

Precautions: *General.* Use cautiously in patients with impaired renal or hepatic function, possible folate deficiency, severe allergy or bronchial asthma In patients with glucose-6-phosphate dehydrogenase deficiency, hemolysis, frequently dose-related, may occur During therapy, maintain adequate fluid intake and perform frequent urinalyses, with careful microscopic examination, and renal function tests, particularly where there is impaired renal function Bactrim may prolong prothrombin time in those receiving warfarin, reassess coagulation time when administering Bactrim to these patients

Pregnancy Teratogenic Effects Pregnancy Category C. Because trimethoprim and sulfamethoxazole may interfere with folic acid metabolism, use during pregnancy only if potential benefits justify the potential risk to the fetus

Adverse Reactions: All major reactions to sulfonamides and trimethoprim are included, even if not reported with Bactrim *Blood dyscrasias* Agranulocytosis, aplastic anemia, megaloblastic anemia, thrombopenia, leukopenia, hemolytic anemia, purpura, hypoprothrombinemia and methemoglobinemia *Allergic reactions* Erythema multiforme, Stevens-Johnson syndrome, generalized skin eruptions, epidermal necrolysis, urticaria, serum sickness, pruritus, exfoliative dermatitis, anaphylactoid reactions, periorbital edema, conjunctival and scleral injection, photosensitization, arthralgia and allergic myocarditis *Gastrointestinal reactions* Glossitis, stomatitis, nausea emesis, abdominal pains, hepatitis, diarrhea, pseudomembranous colitis and pancreatitis. *CNS reactions* Headache, peripheral neuritis, mental depression, convulsions, ataxia, hallucinations, tinnitus, vertigo, insomnia, apathy, fatigue, muscle weakness and nervousness. *Miscellaneous reactions* Drug fever, chills, toxic nephrosis with oliguria and anuria, periarteritis nodosa and L E phenomenon Due to certain chemical similarities to some goitrogens, diuretics (acetazolamide, thiazides) and oral hypoglycemic agents, sulfonamides have caused rare instances of goiter production, diuresis and hypoglycemia in patients, cross-sensitivity with these agents may exist In rats, long-term therapy with sulfonamides has produced thyroid malignancies

Dosage: Not recommended for infants less than two months of age.

URINARY TRACT INFECTIONS AND SHIGELLOSIS IN ADULTS AND CHILDREN, AND ACUTE OTITIS MEDIA IN CHILDREN

Adults Usual adult dosage for urinary tract infections—1 DS tablet (double strength), 2 tablets (single strength) or 4 teasp (20 ml) b i d for 10-14 days Use identical daily dosage for 5 days for shigellosis

Children Recommended dosage for children with urinary tract infections or acute otitis media—8 mg/kg trimethoprim and 40 mg/kg sulfamethoxazole per 24 hours, in two divided doses for 10 days Use identical daily dosage for 5 days for shigellosis

For patients with renal impairment. Use recommended dosage regimen when creatinine clearance is above 30 ml/min If creatinine clearance is between 15 and 30 ml/min, use one-half the usual regimen Bactrim is not recommended if creatinine clearance is below 15 ml/min

ACUTE EXACERBATIONS OF CHRONIC BRONCHITIS IN ADULTS

Usual adult dosage 1 DS tablet (double strength), 2 tablets (single strength) or 4 teasp (20 ml) b i d for 14 days

PNEUMOCYSTIS CARINII PNEUMONITIS

Recommended dosage 20 mg/kg trimethoprim and 100 mg/kg sulfamethoxazole per 24 hours in equal doses every 6 hours for 14 days See complete product information for suggested children's dosage table

Supplied: *Double Strength (DS) tablets*, each containing 160 mg trimethoprim and 800 mg sulfamethoxazole, bottles of 100, Tel-E-Dose® packages of 100; Prescription Paks of 20 and 28 *Tablets*, each containing 80 mg trimethoprim and 400 mg sulfamethoxazole—bottles of 100 and 500 Tel-E-Dose® packages of 100, Prescription Paks of 40 *Pediatric Suspension*, containing 40 mg trimethoprim and 200 mg sulfamethoxazole per teaspoonful (5 ml), cherry flavored—bottles of 100 ml and 16 oz (1 pint) *Suspension*, containing 40 mg trimethoprim and 200 mg sulfamethoxazole per teaspoonful (5 ml), fruit-licorice flavored—bottles of 16 oz (1 pint)

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In the Public Health

An Evaluation of Apgar Scores as Predictors of Infant Mortality

Delton Atkinson, M.S.P.H., M.P.H.

ABSTRACT **In this study, discriminant analysis was applied to three years of birth and infant death data to determine if 5-minute Apgar scores are better predictors of neonatal or postneonatal outcome (i.e. death or survival) than either birth weight or the maternal high risk characteristics available before birth. The results indicate:**

(1) That Apgar score adds to our ability to predict neonatal outcome, over and above the prediction based on birth weight,

(2) That the maternal high risk characteristics available before birth are not very useful variables on which to predict neonatal outcome, and

(3) That neither Apgar score, birth weight, nor the other variables on the birth certificate predict postneonatal outcome well.

INTRODUCTION

The Apgar scoring system is a method of evaluating and rating newborn infants with respect to their physical condition at one minute and five minutes after birth. It was developed in 1952 by Dr. Virginia Apgar for the purposes of "predicting survival, comparing different methods of resuscitation, and comparing perinatal experiences in different hospitals."[1] The system is based on the observation, and the subsequent rating, of five selected factors of an infant's physical health at birth. These factors are heart rate, respiratory effort, muscle tone, reflex response, and color. Each factor is given a score of 0, 1 or 2 based on the performance of the newborn (see Table 1). The Apgar score is the sum of these five 0-2 scores and ranges from 0 to 10, with 10 being the optimum. In the literature, Apgar scores of 0-3 have generally represented poor condition, 4-6 fair condition, and 7-10 good condition.[1,3–13]

In 1978 North Carolina along with 37 other states and the District of Columbia began to routinely record one- and/or five-minute Apgar scores on birth certificates.[12] These scores were added to the certificate with the hope that they provided additional information, although subjective, on the health of infants at birth and on their chances of survival, i.e., information above and beyond that available in other after-birth indicators. Numerous studies have shown strong

TABLE I
The Apgar Scoring Method

	Score		
Sign	**0**	**1**	**2**
Heart Rate	Absent	Below 100/min.	Over 100/min.
Respiratory Effort	Absent	Minimal; weak cry	Good; strong cry
Muscle Tone	Limp	Some flexion of extremities	Active motion; extremities well-flexed
Reflex Irritability	No response	Some motion	Cry
Color	Blue or pale	Body pink; extremities blue	Pink

Source: Apgar V, Holaday DA, James LS, Weisbrot IM, Berrin C: Evaluation of the Newborn Infant: Second Report. JAMA 1958; 168 (15): 1985-1988.

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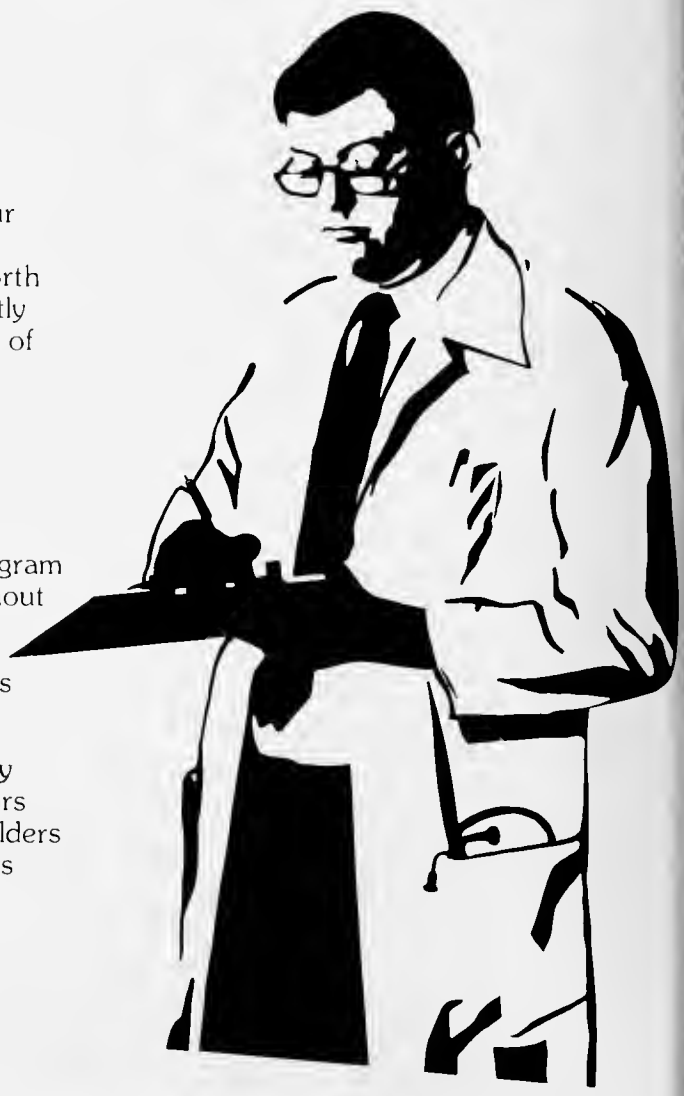

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associations among Apgar score, birth weight, mortality, and some measures of infant morbidity.[1,3,12] Some have suggested that Apgar scores, particularly the five-minute scores, in combination with other known birth characteristics could be used to predict survival.[3,5,6]

With the availability of three years of birth and infant death data that include Apgar scores, we address here the question of the predictiveness of these scores. In particular, the questions of interest were:

a) As an after-birth indicator are Apgar scores better predictors of mortality than birth weight?
b) Are Apgar scores better predictors of mortality than the maternal risk factors available before birth?

Only secondarily did we focus on determining the "best" set of available birth characteristics for predicting outcome.

METHODS AND MATERIALS

Data Source and Completeness

Resident live births in 1978, 1979 and 1980 were used in this study. For those infants who died before their first birthday, the date of death and age at death were placed on the computerized birth record. In total, there were 250,670 resident live births, and among these births, 2,630 neonatal deaths* and 1,094 postneonatal deaths** in this three-year period.

Although Apgar scores are a new item on the birth certificate, completeness of reporting has been good. Of the 250,670 records, 2.1% lacked a 1-minute score and 4.2% a 5-minute score. Almost 2% of the records lacked both a 1-minute and 5-minute score (Table 2). An examination of reporting by year shows that the proportion with missing Apgar scores is declining.

Methodology

Two methods were used to study the relationships between Apgar score and mortality. The first method divides the resident live births into subgroups based on Apgar score and birth weight categories, and compares mortality rates for the various subgroups. The second method is discriminant anaylsis. This procedure enables us to predict with an estimated degree of accuracy to which one of two groups a newborn belongs. In this study, we predict whether infants will survive the neonatal or postneonatal period or will die. Using prediction classification measures and other statistics as criteria, models were compared with regard to the various sets of risk factors.

On the basis of the two study questions, an evaluation of the importance of each discriminant model, the relative contribution of each variable in the model, and the ability of each model to actually discriminate between survival and death was desired. The SPSS Discriminant subprogram was used in this evaluation.[14,15]

To judge the importance of the discriminant model or function, the outputs of interest were the canonical correlation and the Wilks' Lambda. The canonical correlation indicates how closely the discriminant function and the groups (survivors and deaths) are related. The square of the canonical correlation (hereafter referred to as R^2) can be interpreted as the proportion of the variance in the discriminant that is attributable to the variables in the model.[14] The optimum R^2 is 1.0. The Wilks' Lambda, which ranges from 0 to 1, is an inverse measure of the discriminating power in the original variables. In other words, as the Wilks' Lambda moves closer to its ideal value (0.0), the discriminating power of the model increases. Hence, using these criteria only, the better models will be the ones with the highest R^2 and lowest Wilks' Lambda.

The standardized discriminant function coefficients were used to judge the relative contribution of each variable in the model. When the sign is ignored, each coefficient represents the relative contribution of that variable in the model. The larger the coefficient, the greater the relative contribution of that variable to the model. The sign denotes whether the variable is making a positive or negative contribution.

While the R^2 and Wilks' Lambda are important in evaluating a discriminant function, the success of a model in actually discriminating between two groups must be obtained from the classification results. Classification is the process of identifying likely group membership of a newborn when the only information known is the newborn's values on the variables in the model. For example, we would predict whether or not a newborn will die based on mother's age, birth weight, Apgar score, and other information available prior to or at birth. Through a comparison of predicted group membership and actual group membership, the success in discrimination can be measured by observing the proportion of correct classifications. In this study, the most important classification result will be the percent correctly classified for the death group.

*Neonatal death — the death of a live-born child under 28 days of age.
**Postneonatal death — the death of a live-born child of 28 days to one year of age.

TABLE II

Total Number of Records and Percent Missing, One- and/or Five-minute Apgar Scores By Year, North Carolina, 1978-80

Year	Number of Records	Percent Missing One-Min. Score	Percent Missing Five-Min. Score
1978	82,407	2.9	6.8
1979	83,782	1.9	3.6
1980	84,481	1.5	2.4
TOTAL	250,670	2.1	4.2

Several models will be used to compare predictiveness of Apgar scores. Because the literature indicates a higher correlation between the 5-minute Apgar score and mortality than between the 1-minute Apgar score and mortality,[3,8] only the 5-minute score will be used in this study. Models with Apgar score included will be compared with models excluding Apgar score to assess predictiveness.

Sampling of Records

Because of the large number of live births and the associated computer expense of analyzing them, the live births were randomly sampled before using the SPSS Discriminant subprogram. Two survivor samples were obtained. One sample included all infants surviving 27 days. Infants who died in the postneonatal period could be included in this sample. The second sample included all infants who survived 28 days to one-year of life. In both samples, the surviving infants with a congenital malformation were excluded under the assumption that they may more closely resemble a death than a survivor in a dichotomous (i.e., dead or alive) situation in terms of Apgar score and other characteristics. Each survivor sample had 5000 live births.

The two mortality groups contained either all neonatal deaths (2,630) or all postneonatal deaths (1,094) and were used in comparison with the appropriate survivor samples. Both mortality groups included deaths of infants with a congenital malformation.

Because *all* infant deaths and only a *sample* of the survivors were used in this study, the "prior" probabilities of group membership were adjusted to reflect the true proportions of total live births represented by the survivor or death group. For neonatal survivors versus deaths, the true proportions were 0.99 for survivors and 0.01 for the death group. For postneonatal survivors versus deaths, the proportions were 0.996 and 0.004, respectively. If these changes were not made, the proportions automatically used in the SPSS Discriminant Program would have been 0.66 and 0.34, respectively, for neonatal survivors versus deaths and 0.82 and 0.18, respectively, for postneonatal survivors versus deaths, proportions that are different from those in the total population of births.

RESULTS

Apgar Score and Outcome

Distributions of Apgar scores at birth according to the survival experience of resident newborns are shown in Figure 1. Over the the three-year period, the distribution for the postneonatal death group closely paralleled that for the survivor group. The predominant Apgar scores for both groups were 9-10, opposite the distribution for the neonatal death group. Although not shown in Figure 1, about 17% of the infants dying in the neonatal period lacked a 5-minute Apgar score, a percentage over 2.5 times that for missing scores in either the postneonatal death or survivor group. The vast majority of the neonatal decedents with a missing an Apgar score (84%) lived less than three days.

The percentages of infants dying in the neonatal and postneonatal periods at each Apgar score level are shown in Figures 2 and 3, respectively. As expected, infants are more likely to die in the neonatal than the postneonatal period, and regardless of the age at death, infants with a low Apgar score are more likely to die than those with a high score. The low percent dying with an Apgar score of 0 is curious, though this may be a transcription error or a default value recorded by the hospital when an Apgar evaluation was omitted.

An exception to the expected pattern occurs when comparing infants with scores of 9-10 in Figures 2 and 3. Though the percentages are low, infants with a score of 9-10 are twice as likely to die in the postneonatal period than in the neonatal period, a finding also evident when rates are discussed below. Decedents with a score of 9-10 accounted for 67.1% of all postneonatal deaths but only 12% of all neonatal deaths.

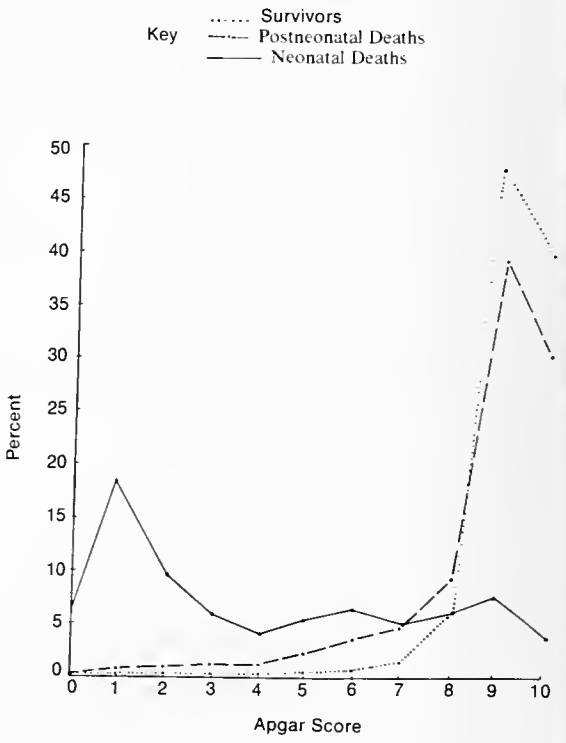

Figure 1. Percents of Neonatal Deaths, Postneonatal Deaths, and One-Year Survivors by Apgar Score, North Carolina Residents, 1978-80.

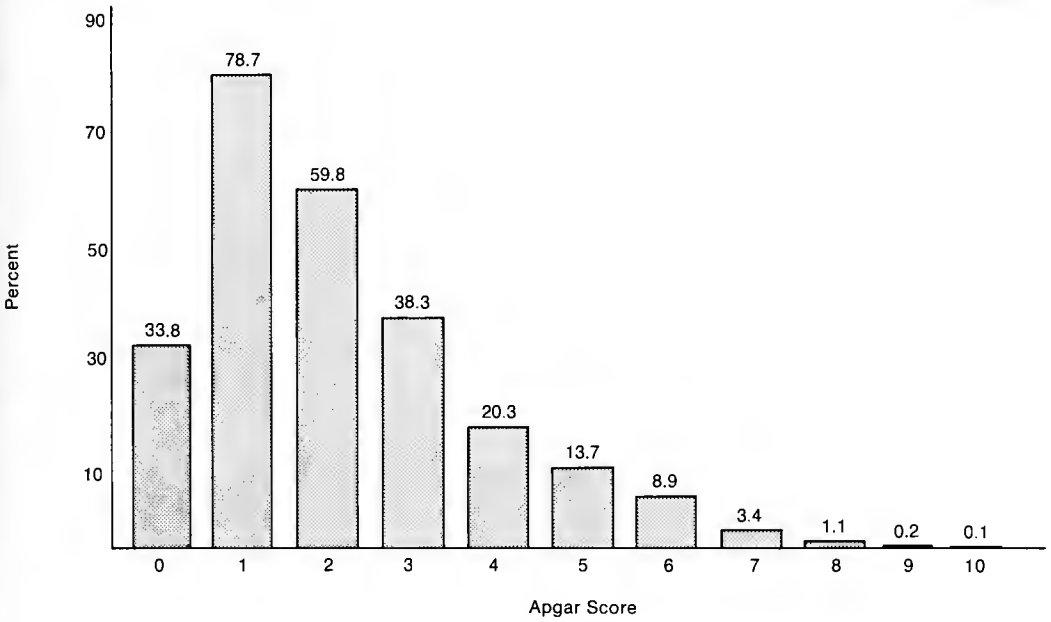

Figure 2. Percent of Infants Dying in the Neonatal Period by Apgar Score, North Carolina Residents, 1978-80.

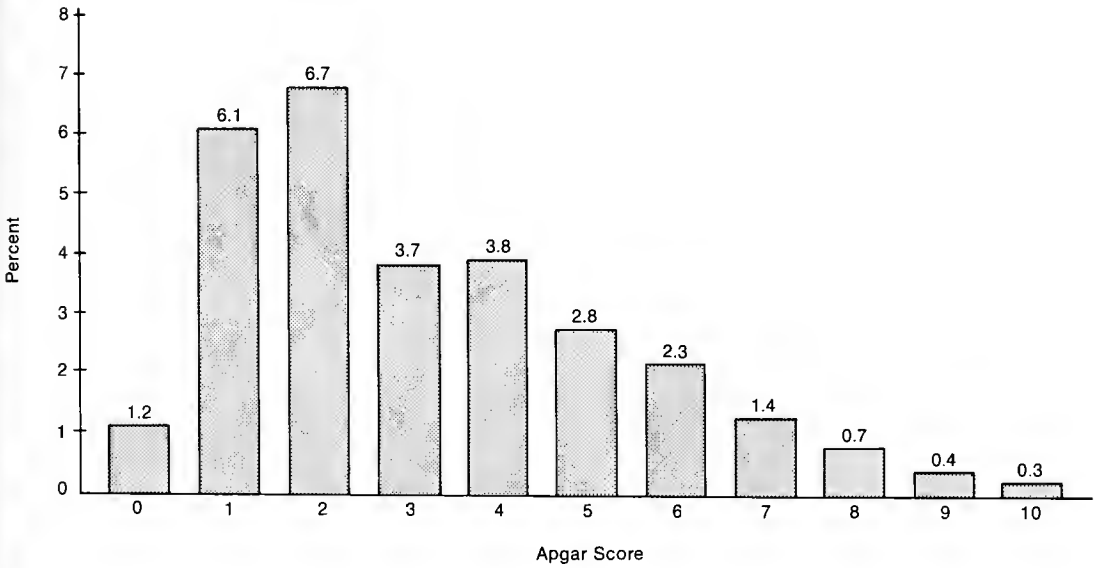

Figure 3. Percent of Neonatal Survivors Dying in the Postneonatal Period by Apgar Score, North Carolina Residents, 1978-80.

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Tables 3 and 4 show the number and rate of infants dying in the neonatal and postneonatal periods, respectively, according to Apgar score and birth weight. Three specific findings from these tables are worth noting. First, the higher risk of death at lower Apgar score levels are not due simply to infants being small babies. Examination of the birth-weight-specific and the birth-weight-adjusted rates substantiates this finding. Within each birth weight category in Tables 3 and 4, the mortality risk decreases with an increase in the Apgar score. This finding, however, does not lessen the importance of birth weight. In fact, a comparison of the low-Apgar-score rates to the high-score rates within different weight categories shows that the risk of mortality actually declines with an increase in Apgar Score more rapidly in the higher than the lower birth weight groups.

The relationship between Apgar score and outcome also prevails when we adjust the Apgar-score-specific neonatal and postneonatal mortality rates in Table 5 by the direct method for differences in birth weight. That is, the chance of dying is greater at the lower Apgar score levels. Infants with a score of 9-10 continue to have a greater overall risk of dying in the postneonatal than the neonatal period after this adjustment. However, as evident in Tables 3 and 4, this risk is higher only for infants weighing more than 1500 grams at birth. For infants weighing less than 1501 grams, the comparable mortality rates are 43.7 for postneonatal deaths and 73.5 for neonatal deaths.

Second, the weight/score composition varies for infants dying in the neonatal period versus the post-

TABLE III

Number and Rate* of Neonatal Deaths According to 5-Minute Apgar Score and Birth Weight, North Carolina, 1978-80

Apgar Score	Less than 1501 g.		1501-4000 g.		4001+ g.		Total	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate
0-3	848	842.9	252	263.0	15	168.5	1115	543.1
4-6	270	387.4	160	59.8	8	33.8	438	121.4
7-8	145	173.0	161	9.2	6	3.2	312	15.4
9-10	40	73.5	270	1.4	10	0.5	320	1.5
Missing	313	513.1	123	13.5	9	9.7	445	41.9
Total	1616	437.3	966	4.3	48	2.0	2630	10.5

*Rate per 1000 live births in Apgar score/birth weight group.

TABLE IV

Number and Rate* of Postneonatal Deaths According to 5-Minute Apgar Score and Birth Weight, North Carolina, 1978-80

Apgar Score	Less than 1501 g.		1501-4000 g.		4001+ g.		Total	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate
0-3	17	107.6	17	24.1	1	13.5	35	37.3
4-6	40	93.7	44	17.5	0	0.0	84	26.5
7-8	35	50.5	128	7.4	3	1.6	166	8.3
9-10	22	43.7	668	3.5	44	2.1	734	3.4
Missing	22	74.1	50	5.6	3	3.3	75	7.4
Total	136	65.4	907	4.1	51	2.1	1094	4.4

*Rate per 1000 neonatal survivors in Apgar score/birth weight group.

TABLE V

Birth-Weight-Adjusted Mortality Rates By 5-Minute Apgar Score, North Carolina, 1978-80
[Standard — U.S. 1978 Live Births]

Apgar Score	Neonatal Mortality*		Postneonatal Mortality†	
	Unadjusted Rate	Adjusted Rate	Unadjusted Rate	Adjusted Rate
0-3	543.1	259.2	37.3	23.9
4-6	121.4	60.7	26.5	16.5
7-8	15.4	10.4	8.3	7.3
9-10	1.5	2.1	3.4	3.8

*Rate per 1000 live births in Apgar score group.
†Rate per 1000 neonatal survivors in Apgar score group.

neonatal period. Almost one-third of *all* neonatal decedents had *both* a low Apgar score (0-3) and a low birth weight (0-1500 grams). Moreover, about one-fourth had a low score and weighed under 1001 grams. No other weight/score group contained more than 11% of the neonatal deaths.

Deaths in the postneonatal period, on the other hand, showed an opposite pattern. Instead of being concentrated in the low weight/score groups, 61% of all postneonatal decedents had an Apgar score of 9-10 and weighed between 1501 and 4000 grams at birth.

Finally, the combination of low birth weight and low Apgar score has a dramatic impact on survival. Among newborns in the lowest weight/score group, 84.3% died in the neonatal period and 10.8% of those alive at 28 days died in the postneonatal period. Approximately 9 out of 10 neonatal decedents in this weight/score group weighed less than 1001 grams at birth.

Deaths in the neonatal and postneonatal periods of infants with an Apgar score of 9-10 at birth were examined for cause of death. This analysis was undertaken on the possibility that the higher postneonatal mortality risk for this score group could be explained by accidental causes of death. Of the infant decedents with a score of 9-10, accidents accounted for 0.9% of the neonatal deaths and 7.5% of the postneonatal deaths. When these causes were excluded from the analysis, infants with a score of 9-10 were still twice as likely to die in the postneonatal than the neonatal period. Moreover, as found before, this higher risk exists only for infants weighing more than 1500 grams at birth. Thus, the higher postneonatal mortality risk for infants weighing more than 1500 grams and with an Apgar score of 9-10 cannot be attributed to accidents.

Predictive Properties of Apgar Scores

Given that Apgar scores have been shown to be associated with mortality, the question naturally arises as to whether these scores, in combination with other known characteristics, can improve our ability to predict survival. To examine the predictive properties of Apgar scores, discriminant analysis was applied to two study groups: a) neonatal survivors and deaths, and b) postneonatal survivors and deaths. But first we were interested in obtaining some indication of how well mortality can be predicted with a discriminant model based on the available birth characteristics. One approach is to examine the correlations between each birth characteristic (the independent variables) and outcome (the response variable). As a general rule, there should be at least one or two large correlations between the independent variables and the response variable.[16]

With respect to the study group of neonatal deaths and neonatal survivors, two variables (Apgar score and birth weight) were highly correlated with outcome (Pearson's $r = -0.764$ and -0.736, respectively, indicating that the higher the Apgar score and birth weight, the lower the probability of death). Of the maternal risk factors available before birth for this study group, the number of prenatal visits was the only factor having a correlation coefficient with an absolute value greater than 0.15. On the other hand, for the study group of postneonatal deaths and survivors, the variable most highly correlated with postneonatal outcome (birth weight) had a correlation coefficient with an absolute value of only 0.30, indi-

TABLE VI

Results of Selected Discriminant Models On Neonatal Deaths Versus Survivors

Model I		Model II		Model III		Model IV		Model V		Model VI	
Variables Entered	Standardized Discriminant Coefficient	Variables Entered	Standardized Discriminant Coefficient	Variables Entered	Standardized Discriminant Coefficient	Variables Entered	Standardized Discriminant Coefficient	Variables Entered	Standardized Discriminant Coefficient	Variables Entered	Standardized Discriminant Coefficient
Apgar Score	1.00	Birth Weight	1.00	Adequacy of Care	−0.21	Birth Weight Squared	−0.89	Apgar Score	−0.17	Birth Weight Squared	−0.88
				Children Born Dead	−0.21	Birth Weight	1.79	Apgar Score Squared	1.16	Apgar Score	−0.26
				Children Born Alive	−0.19					Gestation Aga	0.04
				Age of Mother	−0.08					Apgar Score Squared	0.43
				Education of Mother	0.07					Birth Weight	0.63
				Race of Mother	0.08					Weight × Score	0.97
				Living Children	0.12						
				Month Prenatal Care Began	0.37						
				Prenatal Visits	1.09						
				Marital Status	Dropped						
Wilks' Lambda	0.381	Wilks' Lambda	0.459	Wilks' Lambda	0.754	Wilks' Lambda	0.435	Wilks' Lambda	0.347	Wilks' Lambda	0.291
R^2	0.619	R^2	0.541	R^2	0.246	R^2	0.565	R^2	0.653	R^2	0.709
Classification	**Results**	**Classification**	**Results**	**Classification**	**Results**	**Classification**	**Results**	**Classification**	**Results**	**Classification**	**Results**
Grouped Cases	79.8%	Grouped Cases	83.1%	Grouped Cases	66.5%	Groupad Cases	83.1%	Grouped Cases	87.0%	Grouped Cases	89.5%
Survivor	99.5%	Survivor	99.8%	Survivor	100.0%	Survivor	99.8%	Survivor	99.3%	Survivor	99.2%
Death	42.4%	Death	50.7%	Death	0.4%	Death	50.7%	Death	63.7%	Death	70.7%

* The probabilities of group membership used were 0.99 for survivors and 0.01 for the death group.
†Mean Apgar scores were 9.2 for the survivors group, 4.2 for the death group, and 7.5 overall. Where Apgar score was missing, the group mean for survivors or deaths was substituted
‡The lower the value of Wilks' Lambda, the greater the discriminating power of the model.
§"Dropped" means that the variable did not make a significant contribution to discrimination, and therefore, was deleted when the stepwise analysis was performed.
¶The adequacy of care index was derived from the combination of the month prenatal care began, the number of prenatel visits, and gestational age. The classifications for this index were adequate care, intermediate care and inadequate care. In this study, the codes for these classificetions were 1 for adequate cera and 0 for intermediete or inadequate care

cating that important variables have been omitted. Hence, we may have difficulty in building a model to discriminate between postneonatal deaths and survivors because of the lack of at least one large correlation.

Table 6 shows the results of several discriminant models used to distinguish between neonatal survival and death. Model I is based on the 5-minute Apgar score only. The discriminating power (Wilks' Lambda = 0.381) and the proportion of the variance attributable to this one variable in the model (R^2 = .6195) were both relatively good, but only 42.4% of the neonatal mortality group were correctly classified. In Model II, only birth weight was used and the resulting discriminating power and R^2 were below those of Model I, but the percent of the death group correctly classified was higher. Model III shows that the maternal characteristics themselves are not very useful variables on which to discriminate between death and survival.

These results show that Apgar score or birth weight alone predicts mortality about the same as the other and that each is a better predictor than the maternal risk factors, but one must wonder what the effects will be when other variables are added to the models. Two factors influenced the decisions on the specific variables to include: a) the correlation of the variables with outcome, and b) the results of other studies.

As a first step, squared terms were introduced into Models I and II and the results compared. A squared term in the model would indicate that the relationship between Apgar score and mortality was curvilinear rather than perfectly linear, a relationship suggested by Chase, Greenberg, et al.[5] Birth weight was squared only for comparison purposes. In comparing Models IV and V, it can be seen that Model V, which includes Apgar score, discriminates better between subsequent survival or death than Model IV, which contains birth weight. Also, while birth weight is twice as important as its squared counterpart (comparing the absolute size of the standardized coefficients), Apgar score squared is seven times as important as Apgar score, indicating a definite curvilinear relationship between score and outcome. This relationship is also suggested by Figure 2.

After birth weight and Apgar score, the number of prenatal visits and gestational age were the next two variables most highly correlated with neonatal outcome. Models with gestational age resulted in a higher R^2 than those with prenatal visits, yet the addition of gestational age to Models IV and V resulted in only small increases in the R^2, on the order of 1%. As a result, these models are not shown here. Nevertheless, the model with Apgar score continued to be a better discriminator than the one with birth weight.

In subsequent steps, several models with two, three, four and five variables were tested. These models were comprised of Apgar score *or* birth weight and one or more of the following variables from the birth certificate: Mother's age, race and education, sex of child, gestational age, month prenatal care began, number of prenatal visits, adequacy of care index, marital status, number of children born dead, number born alive now dead, and number of living children. All of the models tested had an R^2 below the models shown in Table 6, when comparing models with the same number of variables. The Apgar score models, which included Apgar score squared, almost always had a higher R^2 than those with birth weight.

In studies by Chase, Greenberg, et al.[5] and by Drage and Berendes,[6] the ability to predict outcome was enhanced by the use of birth weight and Apgar score in the same model. To determine if these two variables together would improve predictiveness, models were created which included both birth weight and Apgar score as well as interaction and/or squared terms. The best model found thus far was Model VI. As shown in Table 6, inclusion of both Apgar score and birth weight did improve predictiveness as illustrated through the R^2s, the Wilks' Lambdas, and the percents correctly classified. For instance, there was an increase of 14.4 percentage points in R^2 over Model IV and an increase of 5.6 percentage points over Model V.

Of the variables in Model VI, the interaction term of birth weight and Apgar score is more important than either birth weight or Apgar score, or their squared counterparts. The importance of this interaction term suggests that any discussion of the relationship between Apgar score and outcome must take into consideration different levels of birth weight. This finding is also illustrated in Table 3. For example, the neonatal mortality rate for Apgar scores of 0-3 for births under 1501 grams is 11.5 times the rate for scores of 9-10 in the same weight group. This ratio is 188 for the 1501-4000 weight group and 337 for the 4001+ weight group, illustrating a definite variation in the relationship between Apgar score and outcome for different birth weight categories.

Further, an examination of the above models shows that Apgar score variables add information not available in the birth weight measures. For example, when Apgar score and its interaction and squared terms were removed from Model VI, the R^2 was reduced by 14 percentage points to 0.57 and the percent of death group correctly classified by 20.7 percentage points to 50%, indicating that Apgar score added to the predictive power of Model VI. Examination of other models by leaving out Apgar score showed similar results.

Turning to the models used to discriminate between postneonatal death and survival, the models tested were not very useful in predicting outcome. The best model showed an R^2 of only 0.15. One explanation for this result may be the similarities in the distributions of Apgar scores for the postneonatal survivor and death groups. The mean Apgar score was 8.6 for the death group and 9.2 for the survivor group. By comparison, the mean Apgar score for neonatal deaths was 4.2, while the survivors of the neonatal period had an average score of 9.2.

DISCUSSION

Although Apgar scores are subjective measures of an infant's physical health, the findings of this study indicate that these scores do have some prognostic value. When discriminating between neonatal death and neonatal survival, Apgar scores alone are at least as good as birth weight alone in predicting mortality, and significantly add to the predictive power of birth weight when the two are used together. Both variables, singularly or in combination with other variables, are much better predictors of neonatal outcome than the maternal high risk variables available before birth. The maternal high risk variables themselves are not useful variables on which to discriminate.

When discriminating between postneonatal death and survival, neither Apgar score, birth weight, nor any other variable on the birth certificate is very useful in predicting postneonatal outcome. This result may be due in part to the fact that the distribution of Apgar scores for the postneonatal death group was very similar to that for the postneonatal survivor group, making discrimination on this variable difficult. Because none of the models predicted postneonatal outcome well on the basis of the prediction classification measures, factors other than those on the birth certificate are undoubtedly needed. Moreover, these results emphasize the difficulty of identifying at birth children at high risk of dying during the postneonatal period.

The discriminating ability of the models in this study may be conservative. One reason relates to the inclusion of accidental deaths. Apgar scores are prognostic measures of the physiological status of an infant. Accidental deaths fall beyond the intended scope of Apgar scores since these deaths are the result of an external rather than internal event. Nevertheless, accidents were included because they comprised a relatively small percentage of the infant deaths. The result of this action was a small increase in the misclassification rate for the death group since over three-fourths of these infants had an Apgar score of 7-10, and therefore, were more likely to be predicted as surviving the neonatal or postneonatal period.

A second reason why the discriminating ability of the models may be conservative relates to the inclusion of neonatal deaths with a missing Apgar score and the substitution of the death group average of 4 for these cases. Several factors point to this conclusion. First, over 70% of the neonatal decedents with a missing Apgar score weighed under 1501 grams. As has been shown, most of the deaths in this weight category with scores had a score of 0-3. Second, regardless of birth weight, over half of the neonatal decedents with an Apgar score had a score of 0-3. Third, 60.9% of the neonatal decedents with a missing Apgar score lived less than one day and 84% lived less than three days, indicating that these infants were in serious trouble at birth and thus would probably have received a low (0-3) Apgar score. Consequently, it is suspected that the "true" mean for neonatal deaths with a missing Apgar score is probably less than four. If, for example, one uses three instead of four as the mean score in Model VI, the R^2 would increase from .709 to .711 and the percent of death group correctly classified would increase from 70.7% to 73.5%. An even lower mean score would result in larger increases.

Despite the prognostic value of Apgar scores for neonatal outcome, we must be cautious about concluding that Apgar scores are definitely better predictors of neonatal outcome than birth weight. The primary limitation of these scores centers around their imprecision. Unlike birth weight, there is no instrument to measure Apgar scores. Consequently, we do not know how valid and reliable Apgar scores are between and among the multitude of raters from one geographic area and/or time period to another. This issue needs further study.

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Bulletin Board

What? When? Where?

Please note: 1. The Continuing Medical Education Programs at Bowman Gray, Duke, East Carolina and UNC Schools of Medicine, Dorothea Dix, and Burroughs Wellcome Company are accredited by the American Medical Association. Therefore CME programs sponsored or cosponsored by these schools automatically qualify for AMA Category I credit toward the AMA's Physician Recognition Award, and for North Carolina Medical Society Category A credit. Where AAFP credit has been requested or obtained, this also is indicated. 2. The "place" and "sponsor" are indicated for a program only when these differ from the place and source to write "for information."

In State

January 9-12
"Advanced Clinical Teaching Skills"
Place: Rougemont
Credit: 20 hours
Info: Katharine Munning, Ph.D., Duke-Watts Family Medicine Program, 407 Crutchfield Street, Durham, NC 27704, 919-471-2571

January 12
"The Investigation of Sudden Death—Beginning at the Scene"
Place: Greenville
Fee: $50
Credit: 6 hours, AAFP applied for
Info: Edwin W. Monroe, M.D., PO Box 7224, Greenville, NC 27834, 919-758-5200

January 14, 15 & 16
"Clinical Hypnosis and Habit Control"
Place: Durham
Fee: $150
Credit: 16 hours
Info: W. B. Wood, M.D., Director CME, 231 MacNider 202H, UNC School of Medicine, Chapel Hill, NC 27514, 919-962-2118

January 22
"Fourth Annual Pulmonary Disease Update"
Place: Greenville
Fee: $50
Credit: 6 hours, AAFP applied for
Info: Edwin W. Monroe, M.D., PO Box 7224, Greenville, NC 27834, 919-758-5200

January 24-26
"Getting Started in Medical Computing"
Place: Durham
Credit: 20 hours
Info: Cindi Easterling, Office of Continuing Medical Education, Duke University Medical Center, Box 3306, Durham, NC 27710, 919-684-6485

January 27
"The Fourth Duke Cardiology Seminar"
Place: Durham
Credit: 6½ hours
Info: Judy Berry, Division of Cardiology, Box 31211, Duke University Medical Center, Durham, NC 27710, 919-684-2255

February 9
"Biological Aspects of Child Psychiatry"
Place: Greenville
Fee: $25
Credit: 3 hours, AAFP applied for
Info: Edwin W. Monroe, M.D., PO Box 7224, Greenville NC 27834, 919-758-5200

February 14-18
"Microsurgery Workshop"
Place: Durham
Fee: $600 ($550 for Resident in Training)
Credit: 40 hours
Info: Donald Serafin, M.D., PO Box 3372, Duke University Medical Center, Durham, NC 27710

February 20-23
"Improving Residency Rotations: Curriculum Planning and Negotiations"
Place: Rougemont
Credit: 20 hours
Info: Katharine Munning, Ph.D., Duke-Watts Family Medicine Program, 407 Crutchfield Street, Durham, NC 27704, 919-471-2571

February 21-23
"Selected Topics For the Practicing Clinician"
Place: Durham
Credit: 24 hours, AAFP applied for
Info: Cindi Easterling, Office of Continuing Medical Education, Duke University Medical Center, Box 3306, Durham, NC 27710, 919-684-6485

January & February
"1st District Medical Society Post Graduate Course"
Place: Edenton, Elizabeth City and Ahoskie
Credit: 12 hours, AAFP applied for
Info: W. B. Wood, M.D., Director CME, 231 MacNider 202H, UNC School of Medicine, Chapel Hill, NC 27514, 919-962-2118

March 3-5
"Diving Accident and Hyperbaric Oxygen Treatment"
Place: Durham
Fee: $280
Credit: 22 hours
Info: Yancey Mebane, M.D., Duke University Medical Center, Box 3823, Durham, NC 27710, 919-684-5514

March 9
"Family Medicine and the Elderly Patient"
Place: Greenville
Fee: $50
Credit: 6 hours, AAFP applied for
Info: Edwin W. Monroe, M.D., PO Box 7224, Greenville, NC 27834, 919-758-5200

March 9-12
"Internal Medicine 1982"
Place: Chapel Hill
Fee: $175
Credit: 25 hours, AAFP applied for
Info: W. B. Wood, M.D., Director CME, 231 MacNider 202H, UNC School of Medicine, Chapel Hill, NC 27514, 919-962-2118

March 24-25

"Seventh Annual Cancer Research Symposium: The Development of Target-Oriented Anticancer Drugs"
Place: Chapel Hill
Info: W. B. Wood, M.D., Director CME, 231 MacNider 202H, UNC School of Medicine, Chapel Hill, NC 27514, 919-962-2118

March 24-26

"Gynecologic Surgery"
Place: Wrightsville Beach
Fee: $175
Info: W. B. Wood, M.D., Director CME, 231 MacNider 202H, UNC School of Medicine, Chapel Hill, NC 27514, 919-962-2118

March 27-30

"Administrative Shells: Faculty as Managers"
Place: Rougemont
Credit: 20 hours
Info: Katharine Munning, Ph.D., Duke-Watts Family Medicine Program, 407 Crutchfield Street, Durham, NC 27704, 919-471-2571

April 8-9

"Carolina Outcome Workshop"
Place: Chapel Hill
Fee: $500
Info: W. B. Wood, M.D., Director CME, 231 MacNider 202H, UNC School of Medicine, Chapel Hill, NC 27514, 919-962-2118

April 13

"Recent Knowledge and Practical Pointers in Office Rheumatology"
Place: Greenville
Fee: $50
Credit: 5 hours, AAFP applied for
Info: Edwin W. Monroe, M.D., PO Box 7224, Greenville, NC 27834, 919-758-5200

April 14-17

"International Single Fiber EMG Course and Symposium"
Place: Durham
Credit: 28 hours
Info: Donald B. Sanders, M.D., Duke University Medical Center, Box 3403, Durham, NC 27710, 919-684-6078

April 17-20

"Workshop on Beyond Advanced Clinical Teaching: Small Groups & Lectures"
Place: Rougemeont
Credit: 20 hours
Info: Katharine Munning, Ph.D., Duke-Watts Family Medicine Program, 407 Crutchfield Street, Durham, NC 27704, 919-471-2571

April 20

"Diabetes Update 1983"
Place: Greensboro
Info: W. B. Wood, M.D., Director CME, 231 MacNider 202H, UNC School of Medicine, Chapel Hill, NC 27514, 919-962-2118

April 23

"Biomedical Consequences of Nuclear Weapons and Nuclear War"
Place: Chapel Hill
Fee: $60
Info: W. B. Wood, M.D., Director CME, 231 MacNider 202H, UNC School of Medicine, Chapel Hill NC 27514, 919-962-2118

April 23-24

"Perinatology and Ultrasound"
Place: Chapel Hill
Fee: $200
Info: W. B. Wood, M.D., Director CME, 231 MacNider 202H, UNC School of Medicine, Chapel Hill, NC 27514, 919-962-2118

Out of State

January 8-15

"1983 CME Cruise/Conference on Medical-Legal Issues"
Place: Puerto Rico, St. Thomas, Nassau
Credit: 18 hours
Info: International Conference, Suite C, 189 Lodge Avenue, Huntington Station, NY 11746

January 10-12

"The Brain, Biochemistry, and Behavior—6th Arnold O. Beckman Conference in Clinical Chemistry"
Place: Tarpon Springs, Florida
Credit: 14½ hours
Info: Dr. Robert Habig, Duke University Medical Center, Box 2902, Durham, NC 27710, 919-684-3905

January 30-February 5

"First Annual Duke Winter CME: The Prevention and Treatment of Surgical Infections"
Place: Nassau, Bahamas
Credit: 24 hours
Info: Cindi Easterling, Office of Continuing Medical Education, Duke University Medical Center, Box 3306, Durham, NC 27710, 919-684-6485

February 6-12

"Radiology Postgraduate Course"
Place: Cancun, Mexico
Fee: $475
Credit: 25 hours
Info: Carl Ravin, M.D., Division of Imaging, Duke University Medical Center, Box 3808, Durham, NC 27710

February 10-11
"Issues in Adolescent Psychiatry"
Place: Tarpon Springs, Florida
Credit: 16 hours
Info: Forrest Smith, Duke University Medical Center, Box 3253, Durham, NC 27710

February 11-13
"Biomedical Topics in Psychiatry: Sleep Disorders, Consultation/Liaison, Substance Abuse"
Place: Hot Springs, Virginia
Credit: 13½ hours, AAFP applied for
Info: Varleria Bloom, M.N., Box 48 MCV Station, Richmond, VA 23298, 804-786-8703

February 17-21
"Pediatrics in Puerto Rico: The 10th Annual Pediatric Symposium of Children's Hospital National Medical Center"
Place: Puerto Rico
Info: Susan Weiss, Children's Hospital National Medical Center, 111 Michigan Avenue, NW, Washington, DC 20010, 202-745-3000

February 21-23
"Gold Coast Seminar: Surgery"
Place: West Palm Beach, Florida
Credit: 8 hours
Info: Cindi Easterling, Office of Continuing Medical Education, Duke University Medical Center, Box 3306, Durham, NC 27710, 919-684-6485

February 24-25
"Second Annual Perspectives on New Diagnostic and Therapeutic Techniques in Clinical Cardiology
Place: Lake Buena Vista, Florida
Info: American College of Cardiology, 9111 Old Georgetown Road, Bethesda, Md 20814

February 28-March 4
"Annual Meeting of The US-Canada International Academy of Pathology"
Place: Atlanta
Info: Dr. Nathan Kaufman, 1103 Chefee Avenue, Augusta, Ga 30904

March 7-9
"Gold Coast Seminar: Pediatrics"
Place: West Palm Beach, Florida
Credit: 8 hours
Info: Cindi Easterling, Office of Continuing Medical Education, Duke University Medical Center, Box 3306, Durham, NC 27710, 919-684-6485

March 20-24
"32nd Annual Scientific Session of the American College of Cardiology"
Place: New Orleans
Info: American College of Cardiology, 9111 Old Georgetown Road, Bethesda, MD 20814, 301-897-5400

April 11-13
"Gold Coast Seminar: Medicine"
Place: West Palm Beach, Florida
Credit: 8 hours
Info: Cindi Easterling, Office of Continuing Medical Education, Duke University Medical Center, Box 3306, Durham, NC 27710, 919-684-6485

April 18-29
(Application deadline February 2)
"Clinical Cytopathology for Pathologists"
Place: Baltimore
Credit: 125 hours
Info: John K. Frost, M.D., 110 Pathology Building, The Johns Hopkins Hospital, Baltimore, Md 21205

The items listed in this column cover the three months immediately following the month of publication. Requests for listing should be received two months prior to the month in which they are to appear. Send information to Patricia Hodgson, Managing Editor, P.O. Box 3910, Duke University Medical Center, Durham, NC 27710.

News Notes

University of N.C.
School of Medicine
N.C. Memorial Hospital

"There has never been a time or a country that could deliver all of the health care that was technically possible to all of its people," Dr. Victor R. Fuchs, professor of economics at Stanford University, told a group of health policy-makers recently in Chapel Hill.

Fuchs gave the keynote address at the 1982 Anglo-American Symposium, a three-day conference that brought together leaders from both sides of the Atlantic to discuss the shaping of health policy in the United States and the United Kingdom.

Integrating different segments of the health care system may be the key to developing a health policy that will meet society's needs in an age of limited resources, Fuchs said.

He called for an integrating of in-hospital and out-of-hospital care, particularly in terms of financing.

"We know hospitals are the most expensive part of the health care system," he said, "and we need to explore how we can better take care of patients regardless of where they are located."

There is a battle going on between the practicing physician and those who manage the health enterprise, Fuchs said. He said the need to acquire capital, comply with regulations and manage a complex medical center have shifted power from physicians to health care managers. He called on both sides to identify their legitimate interests and work out appropriate compromises.

Bilateral cooperation has been the theme of a six-year relationship between the University of North Carolina at Chapel Hill School of Medicine and the University of Alexandria, according to Dr. Mostafa Khalil, vice president of Alexandria University.

"International university collaboration has become inevitable to meet with the varying needs of our new world," Khalil said. "Since the conquering of time and space, transportation is no longer a problem. Direct contact, human relations and collaborating work have become the best means to advance knowledge, accelerate economic growth, develop technological progress and combat disease."

Khalil is a coordinator of the UNC-Alexandria Exchange Program which he started with the late Dr. Merrell Flair of UNC-CH in 1976. The program was funded by the Department of Health, Education and Welfare in 1978 under Public Law 480. It has brought together more than 50 faculty members and students from Egypt and the United States.

The National Cancer Institute has selected the School of Medicine's Cancer Research Center as one of four cancer centers in the nation to receive construction funds in 1982.

The center in Chapel Hill will receive a matching construction grant of $219,010 to complete laboratories for virology and cancer cell biology research in the Lineberger Cancer Research Center Building under construction. The federal grant will be matched by private donations to the center. Construction grants also were awarded to Albert Einstein College of Medicine, the University of Washington and Boston University.

Dr. William Mentz, a fellow in pulmonary medicine, has been awarded a one year scholarship in the amount of $16,000 by the national office of the American Lung Association.

Mentz will spend part of the year developing a procedure which will allow physicians easy access to vital heart and lung information in infants with respiratory failure.

This new procedure involves measuring the absorption rate of several types of gases, all of which infants can safely breathe. "This new technique," Mentz said, "is fast, simple and does not require any penetration of the body."

A graduate of West Virginia University, Mentz completed his residency at the Medical University of South Carolina in Charleston. He has been a fellow at UNC-CH since 1980.

Dr. Frank S. French, professor of pediatric endocrinology, has been appointed director of the Laboratories for Reproductive Biology at the School of Medicine.

The program includes scientists in a variety of disciplines working on molecular mechanisms regulating the formation and maturation of human eggs and sperm, fertilization and embryogenesis. It was established in 1969 under the direction of Dr. H. Stanley Bennett, then chairman of the Anatomy Department.

French said the laboratories will provide support for research, establish a training program for interdisciplinary research in reproductive sciences, and sponsor seminars and workshops.

French, whose main research interest is reproductive endocrinology, has been a professor of pediatrics at the School of Medicine since 1976.

Three faculty members in the School of Medicine have been promoted to full professor, Chancellor Christopher C. Fordham III has announced.

They are Drs. Frank T. Stritter, Donald L. Madison and Gordon H. DeFriese.

Stritter is professor of family medicine in the School of Medicine and director of the Office of Research and Development for Education in the Health Professions.

A faculty member since 1971, he also holds appointments in the schools of Education and Public Health.

He has been granted a Kenan faculty leave award for the spring semester 1983 when he will be a visiting scholar at Stanford University. During that time, Stritter will continue to develop a theory emphasizing the experiential component of clinical instruction.

Madison, who teaches in the School of Public Health as well as the School of Medicine Department of Social and Administrative Medicine, joined the UNC-CH faculty in 1970. His specialties are medical care organization and rural health.

From 1975-80 Madison was director of the Rural Practice Project, and from 1973-81 he was senior program consultant of the Robert Wood Johnson Foundation.

DeFriese, whose appointment is in the School of Medicine Department of Social and Administrative Medicine, has been with the University since 1971. He also is director of the UNC-CH Health Services Research Center and a faculty member in the School of Public Health.

DeFriese has been a consultant to many state and national health organizations, such as the N.C. Department of Human Resources, the National Center for Health Services Research, the American Hospital Association Council on Research and Development and the W. K. Kellogg Foundation.

Barney LeVeau, associate professor of physical therapy, was invited by the Director General of Rehabilitation of Mexico to present a course on biomechanics. The course was held at the Hospital Infantil de Mexico. More than 100 doctors and physical therapists attended the 28 hour course.

Edward V. Staab, professor of radiology, attended the 1982 council meeting of the American College of Radiology. Staab is a councilor from the North Carolina chapter.

Robert A. Whaley, associate professor of radiology, attended a postgraduate course titled "Advances in Diagnostic Imaging" at the University of California. He presented a paper titled, "Current evaluation of the stroke patient: The place of non-invasive vascular testing digital angiography and conventional angiography."

Richard V. Wolfenden, professor of biochemistry, presented a lecture at the American Chemical Society meeting in Kansas City.

East Carolina University School of Medicine

An annual lecture in health law has been established by the East Carolina University School of Medicine in recognition of the support of Judge H. Horton Rountree in development of the medical school.

Announcement of the H. Horton Rountree Distinguished Lecture in Health Law was made by ECU Vice Chancellor and medical school Dean William E. Laupus at the school's fall Health Law Forum, an annual program for physicians, attorneys, and hospital administrators and trustees. Rountree was the program's luncheon speaker.

A Farmville native, Rountree served seven consecutive terms in the N.C. House of Representatives where he was an advocate for the establishment of the medical school. He has been district court judge since his retirement from the General Assembly in 1981.

In making the announcement, Laupus praised Judge Rountree for his years of unselfish effort to the betterment of the community and its region and to the development of the medical school.

Laupus said a plaque to recognize the annual lectures, including Judge Rountree as the first presenter, will be displayed in the lobby of the Brody Medical Sciences Building.

The 1982 Health Law Forum focused on medical staff legal issues and the physician's increasing accountability in patient care. Panels composed of a physician, a hospital trustee and a health lawyer presented discussions on medical staff credentialing, peer review and the impaired or troubled physician.

Laboratory concepts and interpretation of laboratory data were reviewed by an international group at the School of Medicine in October.

More than 50 pathologists and clinical chemists from the Netherlands, Egypt, Iran, Canada and the United States attended the conference, which was directed by Dr. Seymour Bakerman, chairman of the medical school's Department of Pathology and Laboratory Medicine.

Bakerman has directed the program at medical centers throughout the United States since 1974. Also assisting in the course were Drs. Donald R. Hoffman, Paul H. Strausbach and L. Robert Hanrahan with the Pathology Department.

Drs. Raymond A. Dombroski and Samuel S. Lentz have joined the School of Medicine as assistant professors in the Department of Obstetrics and Gynecology.

Dombroski is a graduate of the College of William and Mary and the University of Virginia School of Medicine. He completed his residency training at ECU and Pitt Memorial Hospital in June.

Lentz received his undergraduate degree from Wake Forest University and his medical degree from the Bowman Gray School of Medicine. He completed postgraduate training at North Carolina Baptist Hospital in Winston-Salem.

The Eastern Carolina Family Practice Center will offer its patients the opportunity to visit their family physicians during evening hours two nights a week, a schedule that responds to increasing awareness of public need, according to Dr. James G. Jones, chairman of the Department of Family Medicine at the East Carolina University School of Medicine.

The Family Practice Center's new hours will be from 8 a.m. to 8 p.m. on Tuesdays and Thursdays. The center will continue its regular service from 8 a.m.-5 p.m. on other weekdays.

Jones said the new hours would better serve the citizens in Greenville and Pitt County who work during the day and find it difficult to seek medical care at that time. He said the center will also accept patients without appointments who require emergency care.

The Family Practice Center is operated by the medical school's Department of Family Medicine.

Nearly 100 scientists from Canada, Finland, Romania and throughout the United States visited the School of Medicine Oct. 31 - Nov. 2 to attend the first scientific meeting of the Society for Environmental Geochemistry and Health.

The meeting featured 30 paper presentations and numerous poster sessions which focused on the role of selenium and lead in the environment and health. Papers from the meeting will be published in *Biological Trace Element Research*.

The conference was coordinated by the medical school's Department of Surgery. Dr. Walter J. Pories, chairman of surgery, is past president of SEGH.

SEGH is composed of more than 400 scientists and

physicians from 20 countries who represent a broad range of disciplines in industry, government and academia. The group was established formally in 1971 to further the study of the effects of the geochemical environment on health and diseases of plants, animals and man.

Dr. Alphonse A. Ingenito, professor of pharmacology, served as monitor for the education committee of the American College of Clinical Pharmacology at an international symposium on "Calcium Antagonists: the State of the Art and Role in Cardiovascular Disease." The symposium was sponsored by the American College in October at Philadelphia, Pa.

Faculty members from the School of Medicine's Department of Family Medicine presented several papers in October. Dr. Linda Nieman attended the Southeastern Regional Meeting of the Society of Teachers of Family Medicine in Chapel Hill and presented a paper on "The Family as a Resource to Health: A Home Visit Program." Dr. James G. Jones, chairman of family medicine, gave a presentation on "Medical Student Education" at the same meeting.

Others were Drs. Harold J. May and Dennis Revicki, with a paper on "Physician Stress Syndrome: A Comparison among Faculty, Residents and Practicing Physicians"; and Drs. Janice Daugherty, Julie Nickelsen and Revicki on "Recording/Reporting Residents, Clinical Experiences and Self-Assessed Competence in Multiple Areas of the Residency." Drs. Daugherty and Nickelsen prepared an exhibit on "Appldoc: Microcomputer Software for Curriculum Data Management," for the meeting.

Dr. Allen F. Bowyer, professor of medicine, presented three papers at the XIV World Congress on Diseases of the Chest in October at Toronto, Canada. The papers were "The Presence of Jeopardized Myocardium in Patients with Positive Stress Tests Soon After Myocardial Infarction"; "Use of a Radiolucent Balloon Flotation Catheter during Coronary Arteriography"; and "A Method to Analyze Left Ventricular Wall Motion Appropriate for Nuclear, Echo and Angiographic Studies."

Four faculty members from the Department of Emergency Medicine gave papers at the Emergency Medicine, Today conference in Raleigh in October. Dr. E. Jackson Allison Jr. and Jack E. Gough, R.N., presented "Emergency Management of Flail Chest," and Dr. Joyce M. Mitchell and Jeffrey L. Gise, R.N., presented "Update of Cardiovascular Pharmacology: Verapamil and Bretylium."

Dr. Steve Engelke, assistant professor of pediatrics, attended the Perinatal, Neonatal Conference in Ann Arbor, Mich., in October, where he presented a paper on a "Neonatal Information System Using an Interactive Micro-computer Data Base Management Program."

A guest editorial by Dr. Robert G. Crounse, professor of surgery, entitled "Nutrition Is Not Just for Nutritionists Any More," appeared in the *Journal of the American Academy of Dermatology* in September.

Dr. W. R. Walker, associate professor of psychiatric medicine, was the author of an article on "Phenothiazine Therapy and Latent Organic Brain Syndrome" in the September issue of *Psychosomatics*.

An article by Dr. David R. Garris, assistant professor of anatomy, appeared in the September issue of *Proceedings of the Society of Experimental Biological Medicine*. The article was entitled: "Role of the Preimplantation Embryo in the Timing of LH Dependent Progesterone Secretion From the Rat Corpus Luteum."

Duke University Medical Center

A 9-month-old Brazilian infant has been cured of a rare, fatal disease, known as severe combined immunodeficiency disease, after a bone marrow transplant from her 7-year-old brother that was performed at Duke by Drs. Rebecca Buckley and Lawrence J. Sindel.

Lia Costa of Sao Paulo, Brazil, went home with her mother in October. Of more than 20 patients with this rare disease that Buckley has treated over a 17-year period, Lia was the first who had a sibling with matching bone marrow. After the transplant, Lia soon began producing her own white blood cells. She was treated in the Clinical Research Center at Duke, which is funded by the National Institutes of Health (RR30).

A new technique for measuring iron-coated asbestos fibers in the lungs could play a significant role in future lawsuits concerning diagnosis of asbestos-related diseases.

Two Duke pathologists have developed a technique for counting the coated asbestos fibers in samples of lung tissue. It is an effective screening method that requires much less lung tissue and is simpler than the tissue digestion method currently used.

Dr. Victor Roggli, assistant professor of pathology, and Dr. Philip Pratt, Duke professor of pathology and director of laboratories at the Veterans Administration Medical Center, presented their findings at the 14th Congress of the International Academy of Pathologists in Sydney, Australia.

Findings in a recent study of myasthenia gravis significantly change standard treatment for this neuromuscular disease, saving many patients from a lifetime of drug therapy.

In the first controlled study of its type, 47 patients with myasthenia gravis underwent surgery at Duke University Medical Center to remove the thymus gland. All medications were discontinued or avoided whenever possible, including anti-cholinesterase agents that have been widely used in treatment of the disease. At the time of the last followup—two years ago—all were significantly improved and more than 60% had no remaining symptoms of the disease and required no medication.

The findings from this study were published recently in the journals *Annals of Surgery* by Drs. Warren Olanow, Andrew Wechsler and Allen Roses of the Departments of Medicine and Surgery.

Dr. David C. Sabiston Jr., chairman of the Department of Surgery at Duke, has been named an honorary fellow in the Royal College of Surgeons of England, an honor shared by only five other living Americans.

The James B. Duke Professor of Surgery was inducted in a ceremony September 30 at the University of Nottingham. He was cited for his "international influence on surgery education," particularly in the field of cardiac surgery and cardiovascular research.

Duke University Medical Center's new Ob-Gyn Health Center is now open on the Durham-Chapel Hill Blvd. The center will allow Duke's obstetrics and gynecology faculty members "to extend our ability to serve the health needs of women in the area," said Dr. Allen P. Killam, professor of ob-gyn and director of the new facility.

The Ob-Gyn Health Center is a satellite of the Duke Women's Clinic. Women with complicated pregnancies or serious gynecologic disease, and those having gynecologic exams involving extensive lab work will still be seen in the Women's Clinic at Duke University Hospital. The same Duke faculty members will see patients at both locations.

Duke University will receive $10 million over the next 10 years from industrialist Edwin C. Whitehead and charitable entities funded by him to establish the Whitehead Endowment for Scholars in Academic Biomedicine.

The endowment will support as many as 30 promising scholars in medicine and biomedical research for

three-year terms.

Whitehead was a founder and principal stockholder of Technicon Corporation, a medical instrumentation manufacturer, before the merger of Technicon and Revlon, Inc. He is also a member of the Duke Board of Trustees.

His gift is one of the largest ever made to Duke, topped only by the 1924 indenture of James B. Duke which transformed Trinity College into Duke University.

The Niuta and Roy Titus Biochemistry Laboratory in the Duke Eye Center was recently dedicated. It will be devoted to the biochemical aspects of eye research.

A total of $360,000 given by Mr. and Mrs. Titus and the Helena Rubinstein Foundation of New York City has been used to renovate space in the Eye Center, to purchase equipment and to staff the biochemistry lab.

In addition to handling routine problems, the Eye Center conducts eye research and serves as a referral center for unusual and complicated eye problems.

"For patients in whom medications no longer control their eye pressures, laser treatment is an alternative to more conventional surgery involving incisions in the eye," said Dr. W. Banks Anderson, professor of ophthalmology, during a two-day update at the Duke Eye Center on the use of argon lasers in glaucoma treatment.

Six lasers were available in the Eye Center to train 50 ophthalmologists from around the country. Duke was among the first medical schools to use the laser in treating glaucoma. Treatment can be done in the office in half an hour, with little or no discomfort to the patient, Anderson said.

A Canadian neurologist received the 1982 Wakeman Award for research in the neurosciences following a symposium and dinner at Duke.

The award was presented to Dr. Albert J. Aguayo, director of the division of neurology and neurosurgery at McGill University in Montreal.

The Wakeman Award focuses attention on worldwide neurological research, particularly as it applies to recovery from spinal cord injury, according to Dr. Allen D. Roses, chief of neurology at Duke and chairman of the 1982 Wakeman Award Panel.

Aguayo's research demonstrated that injured nerves in the spinal cord are capable of regeneration in the presence of effective support cells.

The day-long symposium on nerve regeneration was chaired by Dr. James Wyngaarden of the National Institutes of Health and former chairman of Duke's Department of Medicine.

A planned $16 million renovation of Duke South Hospital will give priority to the ob-gyn and psychiatry inpatient units, according to Dr. Andrew G. Wallace, associate vice president for health affairs.

A new $5 million laboratory building is part of the project. It will house all hospital laboratory services in the hospital and Bell Building, except the general purpose labs in Duke North and South.

Up to one-third of those who contract genital herpes may never have a recurrence of the disease, and those who do usually suffer its sporadic discomfort for only a few days.

"Genital herpes usually dies out after a time. It's not a lifetime disease. Most people get over it, although there are a few unfortunate exceptions," Dr. David Durack said at a special two-part "Health Night Out" public lecture on sexually transmitted diseases. Durack is acting chairman of the Department of Medicine and chief of infectious diseases at Duke.

Although there isn't a cure at present, there is hope for those who have genital herpes.

"A prescription cream called acyclovir is an important new development," Durack said. "It's active against the herpes virus, but unfortunately it's not a dramatic cure. It doesn't prevent recurrences."

Duke was among the hospitals where acyclovir was tested before it received Food and Drug Administration approval. The drug is also being developed in pill form and for injection.

A new antihistamine that doesn't cause drowsiness is under study at Duke and may be available for patients next fall.

Terfinadine was given to 50 people who suffered seasonal hay fever and was found to be as effective as antihistamines already on the market, but lacked the drowsiness side effect, according to Dr. C. Edward Buckley, professor of medicine in the division of allergy and respiratory diseases.

"Food and Drug Administration approval is being sought for the use of terfinadine in treating acute seasonal hay fever," he said. "We hope it will be available for patients within the next year."

The drug is already in use in Europe. It could help people who have other allergic reactions, Buckley said. Tests are being conducted to determine its overall effectiveness.

Dr. William T. Creasman has been named the first James M. Ingram Professor of Gynecologic Oncology at Duke.

Creasman is professor and director of the gynecologic oncology division in the Department of Obstetrics and Gynecology. He is also a member of the Duke University Comprehensive Cancer Center.

Robert Green, assistant medical research professor in the division of urology, was awarded a $53,380 research grant for "Detection of Urogenital Normal and Neoplastic Antigens" from the National Cancer Institute.

Doyle Graham, associate professor in the Department of Pathology, was awarded a $52,976 research grant from the National Institute of Environmental Health Sciences for the study of "Environmental Toxin-Induced Neurofilament Neuropathy."

J. David Jones, associate professor of psychiatry and assistant professor of pediatrics, received a graduate training grant of $51,192 from the National Institute of Mental Health for "Targeted Psychiatric Education for Health Care Physicians."

John Moore, professor of physiology, was awarded $69,194 from the National Institute of General Medical Sciences to study biological systems.

James Crapo, associate professor in the division of pulmonary medicine and chief of the division of allergy and respiratory diseases, was awarded an $81,082 national research service award from the National Heart, Lung and Blood Institute for an interdisciplinary training program in lung diseases.

Yasuhiko Nozaki, an associate professor in biochemistry, received a $49,853 award from the National Institute of General Medical Sciences to study "Determination of the Concentration of Biopolymers."

Paul Modrich, associate professor in the Department of Biochemistry, received a $38,688 development award from the National Cancer Institute to study "Molecular Basis of Ecori DNA Restriction Modification."

Hillel Koren, associate medical research professor in the division of immunology, received a $38,750 development award from the National Cancer Institute for the study of "Human NK: Effectors and Specificity in Ovarian Cancer."

Barton Haynes, associate professor in the division of rheumatic and genetic diseases, received a $38,783 development award from the National Cancer Institute to study "Immunoregulation in Autoimmunity and Malignant Disease."

Fearghus O'Foghludha, professor in the division of radiation physics, was awarded $67,555 from the National Cancer Institute. O'Foghludha is studying "Inverse Monte Carlo Design of Photon Beam Modifiers."

Ruby Wilson, professor and dean of the school of Nursing, was awarded $34,042 from the Division of Nursing for a professional nurses traineeship program.

Gary Stiles, associate in the division of cardiology, received $41,564 from the National Heart, Lung and Blood Institute for a clinical investigation award program.

Samuel Warburton Jr., associate professor in the Department of Community and Family Medicine, received a $211,070 award from the Division of Medicine for the establishment of Department of Family Medicine.

Ilene Siegler, training coordinator of the Center of Aging and Human Development, received a $93,675 national research service award from the National Institute of Mental Health for research on adult human development and adaption.

Frank Starmer, associate professor of clinical epidemiology, was awarded a $146,328 research program project award from the National Library of Medicine for medical data bases and clinical investigation.

George Somjen, professor of physiology, was awarded $84,268 from the National Institute of Neurological and Communicative Disorders and Stroke for research on "Hypoxia of Brain Tissue Slices."

Wendell Rosse, chief of the division of hematology and medical oncology, received $107,015 from the National Heart, Lung, and Blood Institute for research on blood banking sciences and related areas.

Scott Rankin, assistant professor of physiology and assistant professor in the division of general and thoracic surgery, received $69,852 from the National Heart, Lung and Blood Institute. Rankin is studying the cardiovascular effects of controlled ventilation.

William Hall, associate professor in the Department of Anatomy, was awarded $39,995 from the National Eye Institute. Hall is studying "Structural Organization of the Superior Colliculus."

Laurence Hedlund, research associate in the Department of Radiology, received a $23,650 grant from the American Heart Association to study "Detection and Analysis of Early Pulmonary Edema."

Edward W. Holmes, professor of medicine and assistant professor of biochemistry, received a $60,531 national research service award from the National Institute of Arthritis, Diabetes, Digestive and Kidney

Diseases to study metabolic and rheumatic diseases.

Andrew Huang, associate professor of medicine, received an $81,420 research grant from the National Cancer Institute for research on "Treatment of Patients with Stage III and IV Cancer."

Wolfgang Joklik, professor and chairman in the Department of Microbiology and Immunology, received a $208,683 national research service award from the National Cancer Institute for the study of viral oncology.

Cynthia Kuhn, assistant professor of pharmacology, was awarded $55,565 from the National Institute of Drug Abuse for research on "Opiate Effects on Maturation of Endocrine Regulation."

Neil MacIntrye, assistant professor of pulmonary medicine was awarded a $36,190 grant from the American Heart Association for the study of "Regional Measurement of Pulmonary Vascular Function."

Dennis Amos, professor of immunology and surgery, received a $220,227 national research service award from the National Cancer Institute. He is studying tumor immunology and immunogenetics.

Montrose J. Moses, professor of anatomy, received a $54,918 grant from the National Institute of General Medical Sciences for the study of "Chromosome Analysis in Lemuriform Primates."

Athos Ottolenghi, professor of pharmacology, received a $112,122 national research service award from the National Institute of General Medical Sciences to study pharmacological sciences.

David Shand, professor of pharmacology and chief of clinical pharmacology, was awarded a $19,047 national research service award from the National Institute of General Medical Sciences for a training program in clinical pharmacology.

Hilliard Seigler, professor of surgery and associate professor of microbiology and immunology, was awarded $450,000 from the National Cancer Institute. Siegler is studying "Diagnosis and New Therapeutic Modalities in Surgical Oncology."

The Bowman Gray School of Medicine Wake Forest University

The Bowman Gray School of Medicine has been awarded the largest research grant it has ever received. The $7.6-million, five-year grant is from the National Heart, Lung and Blood Institute and is intended for support of Bowman Gray's Specialized Center of Research (SCOR) on Arteriosclerosis.

The grant provides $1.5 million for the current year and $6.1 million over the next four years.

Bowman Gray's SCOR program, now in its 11th year, is one of only eight such programs in the nation.

The new grant will support eight major research

projects, and will provide funds for five core laboratories, a data management core and an animal resource core. Laboratories financed by the grant are a lipid analytic laboratory, an endocrine assay laboratory, a pathology laboratory, a lipoprotein laboratory and a comparative clinical studies laboratory.

Projects financed by the grant will involve the work of 29 scientists from four Bowman Gray departments and three scientists from outside the medical school. Projects range from measuring traditional and nontraditional risk factors for coronary artery disease to determining the precise mechanisms involved in immunological injury to the arteries and whether there might be genetic markers that will allow a prediction of the extent of atherosclerosis that will result from such injury.

A Bowman Gray radiologist and a colleague of his at the New York University Medical Center have written a second edition to the very well received book "Medical Radiation Biology."

Dr. Richard L. Witcofski, professor of radiology at Bowman Gray, and Dr. Donald J. Pizzarello, professor of radiology at N.Y.U., produced the second edition following nearly a decade of use of the first edition by hospitals and medical schools.

The book presents a balanced, scientific view of what is known about the effects of radiation. While the first edition tended to emphasize the biologic effects of high radiation doses, the second edition gives greater attention to the biologic effects of lower radiation doses.

The first edition has been the most widely used book on the subject among radiology residents. In addition to residents, the second edition is expected to be of particular interest to medical students and radiologic technologists.

One of the most sophisticated and useful systems for handling the vast amounts of information generated during the process of examining patients in a radiologic department has been installed at the Bowman Gray/Baptist Hospital Medical Center.

The first phase of the system was installed last summer and was intended to greatly reduce the time it takes to get a radiologic report back to a referring physician. The goal was to have a preliminary report available to the referring physician within 12 hours and a hard copy of the report on the patient's chart within 24 hours. Previously, it has taken as long as four days to get a hard copy of a radiologic report to the physician.

The improvement in reporting is the result of a computer and the availability of computer terminals throughout the Radiology Department. Dictated reports are typed into the computer, reviewed and corrected through the computer terminals. The only hard copy produced in the process is the final, corrected and approved copy.

The computer system also permits a second phase of the new program, where everything from patients and examination rooms to view boxes and certain diagnostic phraseology is assigned a barcode identification similar to that used in a grocery store. The radiology computer is fed information about the examination and diagnosis process through use of the barcode identifications.

The entire process permits faster tracking of patients and their films, and in about 30% of cases it permits radiologists to enter one of several standard diagnoses into the computer without having to say or write a thing.

A better understanding of some acute and chronic lung diseases is expected to result from a new research project at Bowman Gray. The work is funded by a five-year, $560,000 grant from the National Heart, Lung and Blood Institute.

One category of lung problems which interests the researchers is acute respiratory distress syndrome, in which an injury to the lungs can start a chain reaction ending with the body doing even more injury to the lungs. To examine the problem in great detail, the researchers are using a strain of rabbit, which is a unique model for the syndrome.

The same model is being used in examining a second category of lung problems where lung tissue is scarred following injury to the lungs. The researchers are interested in the process responsible for the scarring and in the reasons for the body's failure to remove the scar tissue once it has served its normal purpose.

Early results of the research indicate that some of the chronic lung problems the researchers are studying can be treated successfully with anti-inflammatory drugs to intercept and stop the harmful reactions which can result from lung injury.

Thirteen new members of the fulltime faculty at the Bowman Gray School of Medicine have been appointed.

They are Dr. James D. Jones II, associate professor of anesthesia (obstetric anesthesia); Dr. Nial Murray, assistant professor of anesthesia (obstetric anesthesia); Dr. James E. Peacock Jr., assistant professor of medicine (infectious diseases); Dr. Linwood M. Sawyer, assistant professor of anatomy; Dr. Thomas L. Smith, assistant professor of physiology; Dr. Stephen R. Turner, assistant professor of medicine (rheumatology-research); and Dr. Kenneth M. Weesner, assistant professor of pediatrics.

Also, Dr. Bobbie M. Atwell, instructor in community medicine; Dr. Ted A. Glass, instructor in radiology; Dr. David S. Lefkowitz, instructor in neurology; and Dr. Christopher M. Wise, instructor in medicine (rheumatology).

Roy L. Alson, a second-year medical student at

Bowman Gray, has been awarded a community service award from the CIBA Pharmaceutical Co.

The award, which consists of books in the CIBA collection of medical illustrations by Dr. Frank Netter, recognizes Alson's five years of service as a member of the Winston-Salem Rescue Squad. He has been an officer in the squad and was named "Squadman of the Year" in 1978.

A team of doctors from Bowman Gray's Department of Family and Community Medicine has been recognized for research on exercise.

The team received the American Academy of Family Physicians award for the outstanding academic research paper of 1982 at the national meeting of the AAFP in San Francisco.

The paper, "Aerobic Exercise: Physician Beliefs and Practices," reported on a three-year study of how physicians use exercise in their personal lives and how they recommend exercise to patients.

The study revealed that physicians who participate in aerobic exercise are more likely to prescribe exercise for their patients than those doctors who do not exercise.

As part of the project, the research team developed a model exercise prescription which now is used widely by practicing physicians.

L. Ann Daniels, instructor in family and community medicine (health education), has been selected the 1982 chairman of the Allied Health Personnel Committee of the Board of Directors of the Forsyth County Chapter, American Cancer Society. She also will serve as a volunteer trainer for the Management Assistance Program (MAP) of the United Way for 1983.

Dr. Ralph B. Leonard, assistant professor of surgery (emergency medicine), has been appointed chairman of the Educational Resources Committee of the American College of Emergency Physicians.

The American Academy of Family Physicians

During the 34th Annual Convention and Scientific Assembly of the American Academy of Family Physicians (AAFP) held October 2-7, 1982, the board of directors re-elected Dr. George T. Wolff of Greensboro, N.C., to a fourth term as AAFP treasurer.

Dr. Wolff is a past vice-president of the Academy and has served as chairman of the AAFP's Commission on Health Care Services and Finance Committee, among others. He served on the Academy's Board of Directors from 1974 to 1977. He is the director of the Family Practice Residency Program and Family Practice Center at the Moses H. Cone Memorial Hospital in Greensboro. Dr. Wolff received his M.D. degree from Jefferson Medical College, Philadelphia.

Mecklenburg County Medical Society

Dr. David G. Welton has been honored by the Mecklenburg County Medical Society for 30 years of service to that group, the North Carolina Medical Society and the American Medical Association. He was presented the President's Special Award by Dr. John Foust, president of the county society. Dr. James Davis, vice speaker of the AMA House of Delegates presented the following commendation in recognition of Dr. Welton's years of service to the AMA:

> On behalf of the American Medical Association, we congratulate you and offer best wishes on this special occasion in your honor. Your significant contributions to medicine have earned you the respect and friendship of your colleagues throughout the United States.
>
> We know that you have provided outstanding leadership to your county medical society and state medical association. We are most familiar, however, with your dedicated service to the American Medical Association House of Delegates.
>
> For thirteen years you represented the physicians of North Carolina in an exemplary manner. Your attention to the concerns of the practicing physician has had a decided impact on national medical issues.
>
> Your colleagues at the AMA shall miss your experienced counsel. Your great talent for calmly analyzing complex issues has been a valued asset to the Association.
>
> Your wonderful sense of humor and warm sincerity are personal qualities treasured by your countless friends. Your life and achievements have honored us and we are pleased to be a part of this occasion to honor you.
>
> WILLIAM Y. RIAL, M.D.
> President
>
> JAMES H. SAMMONS, M.D.
> Executive Vice President

In Memoriam

JAMES T. MARR, M.D.

James T. Marr was born December 13, 1909, in Mancos, Colo. He received his B.S. at Washburn University in Topeka, Kan., and his M.D. at the University of Kansas School of Medicine. He spent two years in general practice in Sterling, Kan., after which he completed a residency in radiology at the Cleveland Clinic. During World War II he served as radiologist at various Army hospitals in the South and after the war settled with his wife Betty in Winston-Salem. During his years in practice in Winston-Salem he also at various times supplied radiology coverage to the hospitals in Thomasville, Danbury, Yadkinville, and at the VA outpatient office. During this time, he was also an active member of the clinical radiology faculty at Bowman Gray School of Medicine.

He was a Fellow of the American College of Radiology and was active in the N.C. Chapter of the ACR, serving as its president one year. He was also active with the Forsyth County Chapter of the American Cancer Society and the Winston-Salem Sertoma Club, serving as the president of each at various times.

Jimmy was a devoted family man and his wife and daughters were always foremost in his mind. He enjoyed golf and almost never missed a Thursday afternoon round.

He was also a dedicated radiologist and made good use of his early general practice experience in his radiology practice by taking a more personal interest in the patients than many usually do.

He was a colleague and friend to many of us and his passing will leave a void in our lives.

FORSYTH-STOKES MEDICAL SOCIETY

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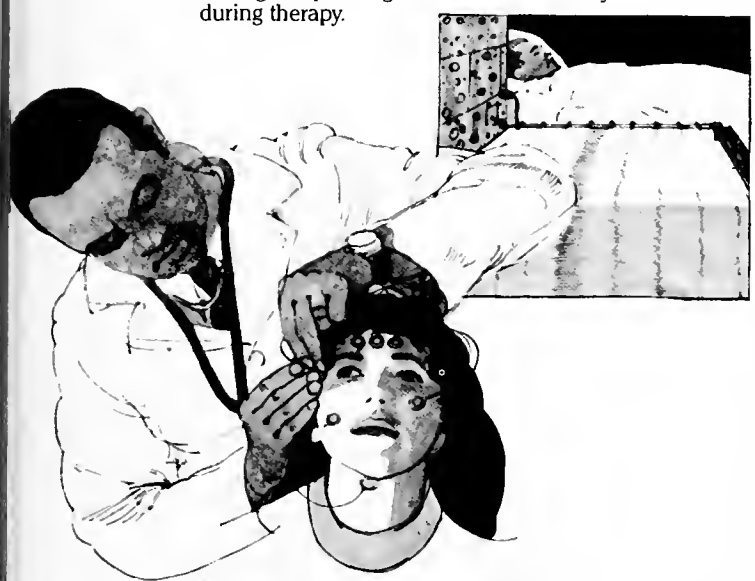

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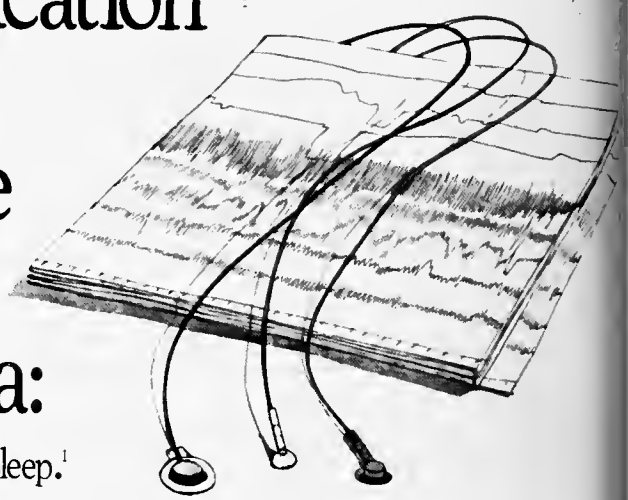

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References 1. Pitts NE, Migliardi JR: *Clinical Pediatrics* 13:87, 1974. 2. Modell W: *Drugs of Choice* 1980-1981. C. V. Mosby Co., St. Louis, 1980, p. 362. 3. Goodman LS, Gilman A: *The Pharmacologic Basis of Therapeutics*, 6th edition, MacMillan Publishing Co., Inc., New York, 1980, p. 1032.

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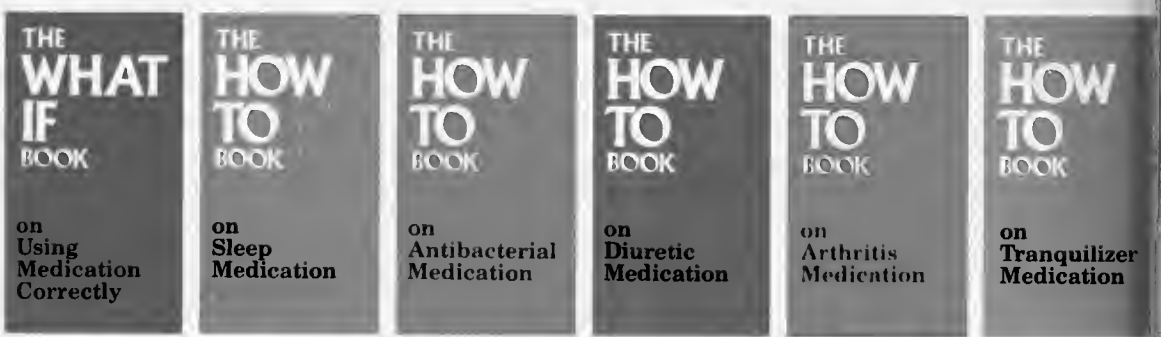

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An Interdisciplinary Approach For Consultation on Multiproblem Patients

L. Scott Campbell, M.H.A., and Donald C. Whitenack, M.D.

ABSTRACT **Multiproblem patients, who create physician uncertainty and frustration, are high utilizers with excessive demands for care and have a low threshold for complaint. Usual therapeutic approaches are often unsuccessful since psychosocial or spiritual factors and underlying individual beliefs may be major components of these patients' illnesses. Twenty-four problem patients were evaluated and treated through an integrative medical team approach involving 10 disciplines during two and a half years. Two-thirds had positive outcomes: 12.5% of the patients' problems were resolved; 25% were much improved, and 29.2% were improved. The results strongly suggest that such patients can be helped through an interdisciplinary team within a medical complex/family practice center.**

THE North Carolina Memorial Hospital Family Practice Center's Project for Comprehensive Interdisciplinary Evaluation and Therapy (PCIET) is a pilot demonstration involving an outpatient approach for multiproblem patients using traditional health care measures and alternative techniques.

Family physicians and most other physicians encounter a small proportion of patients who do not respond to standard attempts at "cure," health education and support. In addition to consuming excessive amounts of time through repeated visits, these patients may prompt physicians to order too many diagnostic tests, prescribe too much medicine, and request unnecessary invasive procedures, even surgery.[1-4] Utilizing an integrated approach, the project team addresses the evaluation, treatment and education of patients who are difficult to manage. Regular PCIET team members include a family physician, hospital chaplain, physical therapist, occupational therapist, family nurse practitioner, registered nurse, clinical social worker, nutritionist, clinical psychologist, and health administrator.

The plan begins with an evaluation of the whole person by the physician and then by members of the team who explore physical, psychological, social, personal, and religious dimensions of the illness with the patient. At a team conference, a plan of therapy combining traditional measures with innovative methods such as relaxation therapy, biofeedback, therapeutic touch, and behavior modification is then devised.

Additional medical, dental or consultative service may include counseling of others in the family and monthly education sessions covering a variety of topics.

BACKGROUND—THE PROBLEM

In early 1979, because of mutual interests, we initiated plans for a comprehensive, interdisciplinary, humanistic approach to the management of multiproblem patients in a family practice center training program.

From the outset there were difficulties in defining these patients. Clinical diagnoses loosely classifying such individuals include Briquet's syndrome,[5] Munchausen's syndrome,[6] hypochondriacal patients,[7] problem patient,[3,4] chronic illness behavior patient,[8] and somatizing patient.[9] Multiproblem patients have also received such derogatory labels as "crock," "turkey," "gomer," "troll," and "doctor shoppers."[9-11]

For the purpose of this paper such patients will be defined as those who: (1) present many and multisystemic problems, (2) are excessively demanding of care and attention, and (3) are perceived by physicians as sickness-prone with a low threshold for complaint. As an aid to recognition and description of such subjects, we have derived a list of patient attitudes, beliefs and characteristics which are frequently observed (Table I).

A recent study of hospitalized patients showed that 13% of patients cost as much to care for as the remaining 87%.[14] Although that study did not specifically address multiproblem patients, we believe they also account for a higher proportion of these costs. They seek medical care more frequently than the usual patient and seem to account for a high percentage of clinic patients seen by both residents and practicing physicians.[15]

From the Department of Social and Administrative Medicine and the Department of Family Medicine, University of North Carolina School of Medicine, Chapel Hill, N.C. 27514

Reprint requests to Mr. Campbell, Social and Administrative Medicine, Box 3 Wing D 208H, UNC School of Medicine, Chapel Hill, N.C. 27514

TABLE I

Characteristics of the Multiproblem Patient

Physical

1. Symptoms may not fit known patterns of disease.
2. Patient may describe symptoms in an unusual or bizarre way.
3. Physical symptoms may result from the conversion of anxiety (somatization).
4. Patients present many and multisystemic problems.

Psychosocial

1. May be likable and engaging at first encounter.
2. May experience secondary gains from "illness."
3. Often have history of non-compliance with earlier medical therapy.
4. May use mystical explanations regarding symptoms.
5. Tends to place responsibility for own health on others.
6. Expresses or alludes to a sense of helplessness.[12]
7. Misuses health care system for minor problems.
8. Often converts masked to overt hostility.
9. Exhibits questionable social skills in long-term relationships.
10. Forms shallow relationships with people.
11. May be very dependent upon spouse or other person.
12. Generally plays alone, or may not play at all.
13. Job experience may be unsuccessful, negative or non-existent.
14. Develops weak support system (family, friends).
15. May rely primarily upon medical providers for support.
16. May have family members who reinforce illness behavior.
17. May have difficulty coping with socioenvironmental stress.
18. Does not appear to have achieved full self-acceptance.
19. May not have completed a grieving process.
20. Expresses or alludes to feelings of guilt.

Others

1. Has frequent physician office visits and numerous hospital admissions.
2. Changes physicians frequently in search of a "cure."
3. "Awfulizes, I-can't stand-it-itis," and "self-downing" behavior.[13]
4. Feels health education is telling me what I want to know and will accept.
5. Believes physicians cure disease.

Certainly, factors relating to this dilemma cannot be attributed to patients alone for as Mechanic[16] observes:

> Physicians appropriately see themselves as having a limited function in the provision of medical care. They are aware that they usually lack control over the environments of their patients and lack the capacity to change many of the life patterns noxious to health and successful adjustment. Both the lack of potency of the physician in these matters and the uncertainty of knowledge encourage a retreat to the patterns of assessment and management of the patient with which the physician is most familiar and with which he feels most secure. He treats the condition and ignores the patient, bemoaning the patient's lack of cooperativeness, irrationality and unreliability. He provides limited information on social aspects of the illness to the patient and his family; he frequently becomes inaccessible to the patient or family who have questions and problems that do not relate directly to the patient's physical status; and he worries more about physical events than the patient's social adaptation to the community or his level of social functioning . . . Illness behavior and coping capacities may be far more influential in medical outcomes than many biological indicators on which physicians focus.

It follows that these attitudes and attributes contribute to mismatched doctor-patient relationships. Engel[17] makes a strong case for the clinical validity of the biopsychosocial model of "illness" in contrast to the traditional biomedical model. Drossman[18] has also emphasized that physicians, especially primary physicians, should be better trained in the psychosocial dimensions of patient care. In other words, traditional medical evaluation and treatment is not sufficient in itself in many cases.

HISTORY

Planning for the PCIET demonstration began in May, 1979. A series of meetings was held with interested members of various disciplines to determine the initial approach and scope of the project.

In the following months the nucleus of the interdisciplinary team was recruited. A few prospective members declined to join, admitting they did not like working with multiproblem patients. However, the majority considered the program a challenge and a personal opportunity to work with, and learn from, other disciplines. Possibly because of the difficulty some physicians have had with uncertainty,[15,19] it seemed that non-physicians might be more tolerant of multiproblem patients.

At first the PCIET team consisted of a family physician, health administrator, hospital chaplain, physical therapist, occupational therapist, clinical social worker and dietician. Later, a family nurse practitioner, registered nurse and clinical psychologist were added to achieve a better balance and provide a broader professional perspective. The physical therapist had training in biofeedback and relaxation therapy techniques, while the nurse had taken courses in therapeutic touch taught by Krieger, the modern-day proponent of this time-honored non-invasive therapeutic technique.[20]

Although the team consisted of representatives of 10 disciplines, patient costs were minimized since professional charges were made only for physicians, physical therapy, social services, and the nurse practitioner. Patients were selected regardless of ability to pay.

Project goals included:

1. Assisting multiproblem patients in resolving or coping with their concerns and problems by involving them in discussions about matters of health which they can control, and by helping them learn how to care for themselves given their many difficulties;

2. Reducing inappropriate utilization of health care resources and health care costs attributable to multiproblem patients; and

3. Teaching family physicians, family practice residents and others

to understand and respond to the whole person so that they might better appreciate value systems, faith and adequate social data in devising therapeutic regimens.

Initially we used two instruments to elicit information from potential patients.

—MILCOM Health History Questionnaire,[21] a checklist covering 135 symptoms within 17 body systems. The questionnaire also solicits demographic, family history and health history data.

—Personal Health Questionnaire, a checklist derived from Holmes' and Rahe's[22] "Social Readjustment Rating Scale" covering personal psychosocial information and stressful life events.

THE PROCESS

Candidates were screened by the family physician. Broad criteria were used in determining whether the person displayed characteristics of the multiproblem patient. Factors taken into consideration included:

1. The patient's current medical problems elicited by an interview with the medical director plus information from the patient's physician and the two questionnaires completed by the patient;

2. A review of the patient's past medical records with particular emphasis upon health care utilization patterns and family health histories;

3. Whether the patient displayed some of the characteristics listed in Table I;

4. The patient's desire to participate in the project (a consent form was devised and approved by the medical school's Human Subjects Committee).

Patients accepted underwent a comprehensive physical examination by the medical director who determined which team members should assist in evaluating the patient and whether consultations were needed. The basic elements and process are diagrammed in Table II.

The usual time frame and sequence of events evolved into a relatively standard pattern. Twice a month (every other Tuesday) a multiproblem patient would report to the Family Practice Center clinic for the physician's assessment.

The health administrator assumed the role of coordinator for team member evaluations, assuring that copies of the medical exam/problem list write-up by the physician and completed questionnaires were available for a team member's review prior to consultation with the patient (Thursday of the same week).

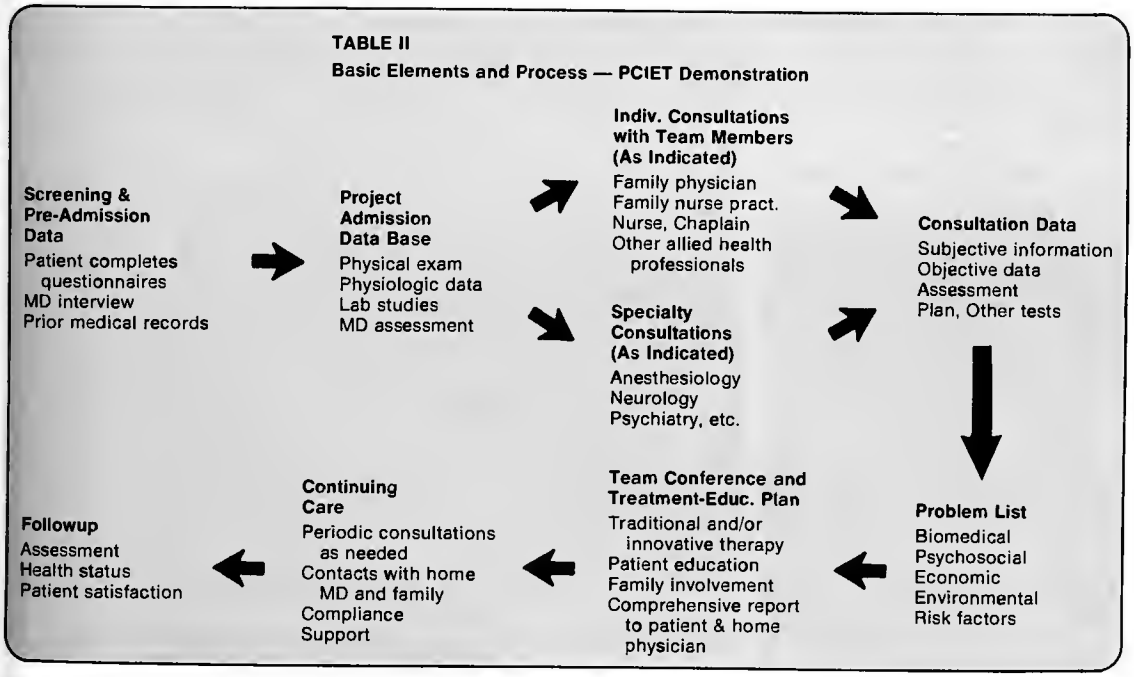
One week later the team met in conference for one to one-and-a-half hours. The medical director called upon those consultants who evaluated the patient for a summary of their findings and recommendations. Following the presentations there was ample time for discussion. Conferences provided for the exchange of valuable information by representatives of each discipline involved.

The synergistic effect of interdisciplinary team activities, as opposed to multidisciplinary efforts, has been reported in the health literature.[23] While multidisciplinary outcomes for patients represent the sum of the disciplines involved functioning individually, outcomes for interdisciplinary patient interventions add up to **more than the sum** of the participants' different disciplines with team member interaction.

During some of our PCIET team conferences, particularly as the health professionals became more cohesive, interesting group pro-

TABLE II

Basic Elements and Process — PCIET Demonstration



cesses were noted. For instance, it was not unusual for one of the participants to make a recommendation that no one else had considered. Also there was occasional constructive debate about some component of a patient's treatment-education plan.

The next day the health administrator compiled a draft of PCIET team recommendations which were not necessarily limited to the patient, but sometimes involved the whole family. The general format of the summary of recommendations for a given patient was divided into a number of goals with specific steps for attaining the particular goal.

The medical director completed the treatment-education plan and, as soon as possible, scheduled a discussion with the patient to clarify its components. These sessions often included the patient and others as necessary. If a patient perceived that he could not comply with some aspect of the plan, a compromise was sought. Thus unrealistic expectations were avoided and a realistic plan devised.

OUTCOMES AND CASE EXAMPLES

From November 1979 through October 1981, 28 people fulfilled the criteria established for multiproblem patients. Four declined participation, leaving 24 patients.

Approximately two-thirds of the multiproblem patients lived nearby simplifying management accordingly. Patient age, sex and marital status are given in Tables III and IV.

TABLE III

Mean and Median Age by Sex — PCIET Patients

Age	Female (n=19)	Male (n=5)
Mean	51.6	42.5
Median	51.0	45.0
Range	27-77	22-52

TABLE IV

Marital Status by Sex —PCIET Patients

Status	Female (n=19) No.	Female (n=19) Percent	Male (n=5) No.	Male (n=5) Percent
Single	3	15.8	2	40.0
Married	11	57.9	2	40.0
Separated	2	10.5	0	0.0
Divorced	0	0.0	1	20.0
Widowed	3	15.8	0	0.0

Criteria for patient improvement were based upon the following outcomes:

1. Compliance with treatment-education components.
2. Reduction of pain or suffering.
3. Reduction of risk factors (alcohol consumption, drug abuse, overeating, etc.).
4. Decreased demand on physicians and health services.
5. Reduced medical charges and health insurance claims.
6. Improved family relationships.
7. Fewer sick days.
8. Patient satisfaction.

Table V lists patient disposition and medical outcomes at the point of last contact or followup. Twelve of the multiproblem patients chose to continue under the care of the medical director at the Family Practice Center.

Five patients who received continuing care by the medical director for periods ranging from several weeks to more than a year either returned home to their own primary physician or moved away. Seven patients sought no followup care within the project after their initial evaluation and therapy. Two of them left without forwarding addresses.

Although each criterion for improvement was never formally measured, general outcomes were verified through telephone conversations with the patient's home physician or recent telephone interviews with the patient. Of the 24 multiproblem patients, 16 or two-thirds have "improved." In this study, improvement is based on positive behavioral outcomes with respect to each individual case. Obviously, this paper cannot provide detailed summaries of all the results, but two representative cases are described below.

Case Summary #1

A 52-year-old twice-divorced newspaper man, an admitted alcoholic, suffered from obesity (weighing over 300 pounds), hypertension, diabetes mellitus, depression, a poor self-image, and had had suicidal thoughts.

His father was also an alcoholic and the patient was reared by his over-protective mother who pampered him as her only child. Reportedly, he began drinking heavily following his mother's death in 1958. Alcoholism directly contributed to divorce by his second wife and also loss of two responsible newspaper positions. He was in-

TABLE V

PCIET Patient Disposition and Outcomes at Last Contact

Disposition	Medical Outcome	Number	Percent
1. Continuing care through May, 1982	Problems resolved	2	16.7
	Much improved	3	25.0
	Improved	3	25.0
	Improved, but relapse	1	8.3
	No improvement	3	25.0
	Subtotal	12	100.0
2. A period of followup care, but returned home or left area	Problems resolved	1	20.0
	Much improved	1	20.0
	Improved	1	20.0
	No improvement	2	40.0
	Subtotal	5	100.0
3. Returned home or left area after PCIET evaluation	Much improved	2	28.6
	Improved	3	42.8
	Unknown	2	28.6
	Subtotal	7	100.0
Summary of all patients	Problems resolved	3	12.5
	Much improved	6	25.0
	Improved	7	29.2
	Improved, but relapse	1	4.2
	No improvement	5	20.8
	Unknown	2	8.3
	Total	24	100.0

secure in his third newspaper job and admitted to an "awareness I am cheating myself, the world, and certainly the world of journalism."

During a seven-year period he was hospitalized twice for depression and alcoholism. Following the second hospitalization he joined Alcoholics Anonymous and took disulfiram for 15 months; however, he "didn't feel much better or fulfilled" so he resumed drinking. Major injuries have included a fractured arm and three broken noses sustained in "fights" which were related to alcohol consumption.

He did not date because of obesity and lack of self-esteem. His support system consisted of a group he called the "over-the-hill-gang." These drinking buddies got together mainly on weekends to socialize. During the week he confessed a pattern of solitary drinking, averaging almost two-thirds of a fifth of whiskey nightly.

A comprehensive evaluation and medical examination were conducted. The recommended treatment-education regimen began by setting up regular weekly appointments for the patient, rotating between the medical director, a senior resident physician interested in alcoholism and the nutritionist. Specific components of the plan included:

1. A no-suicide contract between the patient and resident physician.
2. An agreement to cease drinking.
3. Carbohydrate limitation and weight loss program.
4. A diuretic drug for his hypertension.
5. A weekly menu plan and once-a-week grocery shopping as opposed to his previous daily impulsive food purchases.
6. Rejoining Alcoholics Anonymous (he chose not to).
7. Gradual resumption of exercise.
8. Encouragement to contact any team member immediately if problems developed.

In the ensuing months his progress was reviewed at PCIET team meetings and once he was invited to one of the conferences where he stated he was doing very well and did not ever want to disappoint the team.

This patient chose to continue scheduling regular monthly appointments with the medical director, to whom he related well and to whom he became strongly attached. Also he voluntarily attended many of the health education evening sessions at the Family Practice Center.

Recently, after 24 months in the program a structured phone interview followup revealed continued improvement despite minor setbacks. During the interview the patient stated he was "immensely satisfied" with the PCIET program, that his overall health was much better, as were his attitude and self esteem.

Reportedly, he is functioning well at his job with increased responsibilities and few sick day absences. He candidly admitted that his alcoholism problem is significantly improved although he has been "off the wagon maybe once every six months."

Currently, he is limiting his dietary carbohydrate intake and has resumed graded exercises. His weight is down to 278 pounds.

He is now dating and reports his last mood change was "sadness" because a woman he was seeing returned to Florida. In spite of this "loss" he seems able to cope realistically and no longer relies upon "the bottle to resolve problems."

In response to the question, "Before entering the PCIET Program, approximately how much was **medical** care costing you per year (including drugs and insurance reimbursement)?" the patient estimated an average of $1,650. A related question elicited that he has spent approximately $800 on medical care during the last 12 months.

This man credits his overall improved health to himself, the team in general, and particularly to his physician. Careful medical management and patient compliance and satisfaction have contributed to his improved well-being.

Case Summary #2

A 46-year-old single female, fulltime health employee, came to the program after years of low back pain and numerous medical and surgical interventions. Although she was not physically immobilized her suffering continued unrelieved. PCIET consultation was prompted when she was given the choice of living with her pain or undergoing further surgery which might result in some leg paralysis. Hospitalizations included an appendectomy and hysterectomy in 1973; eight admissions for alleged neurofibromatosis (none confirmed upon pathological examination) resulting in laminectomies or rhizotomies between 1975 and 1979; and two admissions for Crohn's disease in 1980 — a condition first diagnosed in 1968.

This woman had functioned fairly well professionally, but found her personal and social life deteriorating. When she was seven her 30-year-old mother died following childbirth; the patient experienced rapid emotional separation from her father and she soon was sent to live with her grandparents.

While in the military service overseas in 1961, she was engaged to be married but after a geographical separation because of different assignments the wedding was called off. However, for several years she dated little, believing they would get back together. Recounting her mother's death and estrangement from both her father and fiancee evoked considerable emotional pain, sorrow and grieving.

She also reported decreased sexual desire and had recently broken off a relationship with a man because it was sexually unfulfilling. This she attributed primarily to her pain and stress. Her play (swimming, team sports) and leisure activities (gardening, going out at night) had also decreased because of the pain. Her support system consists of several professional friends and a roommate.

When she entered the PCIET she was taking several medications as well as codeine, 30-60 mg per day. After a comprehensive consultation, the PCIET team recommended (1) no surgery at this time, (2) a month long trial use of TENS (transcutaneous electrical nerve

stimulation under the supervision of the team physical therapist, (3) patient education discussions, and (4) gradually increasing physical activity.

A three-month followup was encouraging because after a successful trial she purchased a TENS unit and was continuing to experience a lessening of pain to the extent that she had ceased pain medications entirely. Also, there had been no further job absenteeism and she had resumed her favorite physical and social activities.

Other than the physical therapist sessions, this woman did not seek further consultations with any of the team members. A 24-month followup interview by telephone revealed that her pain is controlled with the TENS unit which she takes off only at night and that she is considering purchasing a newer unit with greater adaptability and long lasting batteries. When asked about pain medications, she proudly admitted that she is not taking any narcotics, only an occasional dose of zomepirac sodium.

She had been rehospitalized for six weeks for her Crohn's disease within the past six months. Despite this latest bout of illness, she seemed cheerful on the phone only lamenting use of all her vacation and sick days. When asked about her experience with the PCIET program, she replied that she was "very satisfied."

The average annual cost of medical care was $9,400 per year for the three years before entering the program. Unfortunately, the recent six-week hospital stay cost about $28,000, according to her, raising her medical costs to approximately $30,000 for the last 12 months.

Overall this patient's low back pain is under control with the TENS unit and non-narcotic medication. Back surgery has been avoided. Except for recurring Crohn's disease, she is better.

DISCUSSION

We concur with Engel's[17] biopsychosocial model of "illness." It is particularly useful in assessing multiproblem patients who require a coordinated, interdisciplinary effort. The team approach in health care and human services is not a new concept although it has received increasing attention in recent years. At present, the team concept appears to hold much promise in dealing with complicated problems such as chronic pain.[24,25] Silver[26] used a team approach in primary health centers as far back as the late 1940s, and more recently Westberg and his colleagues are promoting a tripartite team concept (physician, pastoral counselor, nurse) through outpatient Wholistic Health Centers in the Midwest.[27] Indeed, Ducanis and Golin [28] in their book on the use and effectiveness of interdisciplinary health care teams appropriately conclude:

> . . . it is highly probable that **teamwork** is likely to become **more** important in the years ahead. The movement toward specialization will accelerate, and the knowledge base of the professions will continue to expand (perhaps at a somewhat slower rate than in the immediate past). An increasing specialization means a continuing need for coordination, if the client is to receive high quality care. Thus to avoid the problems inherent in the fragmentation of client services, some form of team approach will be demanded.

Ideally, the PCIET study could have been enhanced through the administration of one or more well-designed followup questionnaires to the home physician of each multiproblem patient (e.g., the physicians of those patients who did not continue their care at the Family Practice Center). This would have provided useful information such as: (1) the home physician's satisfaction with the consultation process, (2) known difficulties encountered by patients in complying with team recommendations, and (3) whether the service was of any educational value to the physician.

To our knowledge this interdisciplinary approach for the consultation and management of multiproblem patients is the first to be undertaken in a medical school/teaching hospital family practice center setting. Further similar demonstrations involving a larger sample of problem patients are needed in order to validate our general observations.

CONCLUSION

Although a portion of the outcome data is based on subjective impressions, the overall results suggest strongly that multiproblem patients can be helped by an integrative medical team approach. Obviously, certain disciplines and some technical services described herein are not generally available except in tertiary care centers. But family and other primary physicians may render a valuable service to particular patients via the interdisciplinary consultation route. By choice this study avoided a classical experimental design, because patients served as their own controls, permitting an analysis of change over time. Not every case was successful; however, as reported in Table V, of the 24 patients studied, problems were resolved in three, six were judged much improved and seven were considered improved. While these outcomes are encouraging and exceeded our own expectations, the results should be viewed with caution since the sample is small and a more extensive evaluation would have been desirable.

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SPECIAL ARTICLE

Successful Pediatric Primary Care in a Public Health Setting

Thomas G. Irons, M.D.

MANY health departments in North Carolina are engaged in primary care programs. In child health sections, primary care funds are mainly utilized to support well child care given by public health nurses. In the Craven County Health Department, a program of total primary care for indigent children has been operating since the winter of 1975. At present, it provides preventive well care and sick child care as well as care of hospitalized newborns and older children to a large number of Craven County residents. Outpatient visits to the clinic in fiscal year 1981-82 were 10,191. Despite many bumpy spots in the road, the program has progressed and been extraordinarily successful. I would like to tell you about the program itself, its history, patient services provided, and what I believe to be the reasons for its success. I would also like to share with you some of the real problems we have encountered along the way.

I will begin by asking three questions. First, why consider such a program? In most communities, care of indigent children is provided by private physicians with maintenance and preventive health care being provided by the local health department. In New Bern, private physicians realized in the early 1970s that there were a large number of indigent patients who were only receiving medical care when crises occurred. Furthermore, they found followup difficult and extremely frustrating. It was with their support, not opposition, that this program was established. Details will be discussed later. Secondly, can such a program complement, not compete with, private practice-based community health resources? Despite the skepticism of many people in the community and of many community medical leaders, the program has succeeded quite nicely in doing so. Third, can it be cost-effective? This is one of those critical questions that is most difficult to answer. It is certainly the impression of our community public health leaders, pediatricians, and hospital administration that the program has made a dramatic reduction in the cost of hospital care for sick indigent children. Aside from perinatal mortality figures, we have not been able to assess this in any formal way at present. Such an effort is being undertaken now.

TABLE I

Demographic Data

Craven Co. Pop.	67,500 (28% Non-White)
Pamlico Co. Pop.	10,000 (32% Non-White)
Jones Co. Pop.	9,500 (40% Non-White)
% Unemployed (March 1982)	5.7%
Physician-Patient Ratio	1:2,500

For those of you who do not know New Bern, it is a lovely community on two rivers, the Neuse and the Trent, a very short distance from the North Carolina coast. The Craven County population is 67,500, 28% non-white (Table I). Craven County Hospital also serves Pamlico County (population 10,000) and Jones County (population 9,500). The primary care service is involved with Jones and Pamlico County patients in hospital newborn care. The unemployment rate is lower than the state average but not an honest reflection of the size of the indigent population. In other words, there are a large number of people who have dependent children who are not drawing unemployment compensation. Physician-patient ratio in Craven County is 1:2500, which is relatively good when compared to similar counties, probably because of the recreational opportunities in the area.

The need for indigent patient care outside the private office was recognized by the only practicing group of pediatricians in the community in the early 1970s (Table II). With their support, the public health department applied in 1975 for state primary care funds. After the approval of the request, public health nurses were trained in physical assessment and two pediatric nurse practitioners were hired to operate the clinic. There was no sick child care in the clinic until the spring of 1976, when the local pediatric group cooperated in staffing a primary

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TABLE II

History of the Program

- Private physicians recognized need for indigent patient care outside office setting.
- DHS allocated primary care funds Original Primary Care Budget 1975
- Private physicians cooperated in staffing PHD-based primary care clinic, Spring 1976.
- Appointment of NHS physician, with brief termination of relationship with private physicians, Summer 1978.
- With combined efforts of community pediatricians, hospital administrator, and health director, contractual relationship between ECU, CCHD established.
- Duke Endowment-Reynolds Foundation Grant to provide pediatric services.

care clinic in the department. In addition to providing backup coverage for the nurse practitioners by telephone, the physicians spent several hours each week in the department seeing problem patients. At this time, standing orders were developed so that the nurse practitioners could treat acute minor illness and provide prescribed medication. Problems developed in the relationship between the public health department and the primary physicians, and for about six months, in early 1978, the clinic functioned with the private physicians providing telephone support from their offices. This problem was temporarily solved in 1978 with the appointment of a National Health Service physician to the clinic. This was, from the beginning, not a long-term program and, although helping in-house, did not resolve many of the difficult problems of the clinic's relationship with the practicing community. Furthermore, the problem of adding federal input to what was initially a "home-grown" program was a very significant one. After the National Health Service physician left the health department in December 1980, the department actively began to seek other on-site physician support. On several occasions, the possibility of association with a medical school training program was discussed. There was considerable opposition in the health department administration to such an idea, with the major problem being concern that the continuity of care of the patients would be impaired by bringing in trainees. The health director noted at the time that she did not know of a medical school-associated clinic that provided really acceptable total primary care. However, as other possibilities appeared less and less likely to be productive, a relationship with the East Carolina University School of Medicine (ECU) was established. Thus began a new era in the operation of the Craven County Health Department Child Health Section. We are now nearing the end of the first year of operation of this clinic with very positive feelings about our situation.

Initial financing, in addition to the primary care and Maternal and Child Health (MCH) budgets, was strongly boosted by the award of a Duke Endowment-Reynolds Foundation joint three-year grant. After several months of negotiations, a contractual relationship among ECU, Craven County Hospital, and Craven County Health Department was developed. The contract is relatively simple and provides that Craven County Hospital and Craven County Health Department agree to pay the School of Medicine a monthly fee. In return ECU will provide a supervising physician and physician trainees to deliver primary care to the indigent pediatric population of Craven County. The major goal of the program, not set forth in the contract but understood by all those participating, is to train residents in a "model-practice" where emphasis is placed on problems typically encountered rather than on inpatient problems as met in a university hospital. The organizational framework of the clinic is, in fact, integrated with the health department organization rather than being a separate unit. One full-time physician, the equivalent of two full-time nurse practitioners (one actually a physician's assistant), three public health nurses, one nurse clinic coordinator, three community health aides, and the usual large number of clerks necessary to process the reams of paperwork involved in state and federally supported programs, make up the clinic staff. The clinic is housed in a converted county home, a one-story building which is quite tastefully decorated and reasonably spacious. The waiting area is already too small as more and more patients visit us, and the problem is far from being solved. I might inject, parenthetically, that I believe the clinic population has grown substantially because of the current economic situation.

As was stated in the introduction, there were just over 10,000 patient visits in fiscal 1980-81 (Table III). This would include six months when no physician was in the clinic, so we fully expect larger numbers in 1981-82. Of those visits, 2,600 were Medicaid-supported, 7,600 were non-Medicaid indigent, and a very small number, about 200, were private-consultative. These patients were seen largely as a service to physicians in this and surrounding communities. No private patients are seen in the clinic on a continuing basis. Local private patients are only seen at their physicians' requests. Even in this case, it is always on a one time only basis. The clinic provides (Table IV):

1. Immunizations free of charge in the standard fashion. Some 3,000 people were immunized in fiscal 1980-81. Ninety-seven percent of children presenting for preschool registration in Craven County are fully immunized.

2. Hospital care of sick and well newborn infants in association with the health department-based Maternity Clinic. The Maternity Clinic serves both Jones and Pamlico Counties, and therefore the hospital care of infants includes those from both of these areas. After the initial hospitalization, infants are returned to the public health department in their home counties. If special and potentially serious pediatric problems exist, many are retained in the Craven County Clinic until such problems are dealt with or local care

TABLE III

Patient Visits
April 1981 - April 1982

Total Visits	10,400
Medicaid	2,600
Non-Medicaid indigent	7,600
Private (Consultative only)	200

TABLE IV

Services Provided

Number of Patients Immunized	3,000/yr.
Percentage of Preschool Children Immunized	98%
Hospital Care of Newborns	360/yr.
Percentage of All CCHD Deliveries (Includes Jones and Pamlico Counties)	37%
Well-Child Care - EPSDT Screening (Includes 611 who were Medicaid recipients)	3,372
Primary Sick Care Visits	6,819

- 24-hour sick child coverage
- Child Medical Examiner Program
- Educational Resource for Community:
  - Physicians
  - Nurses
  - Allied Health Personnel

is arranged. Approximately 360 babies per year receive this service. In the last year, these deliveries comprised 37% of all deliveries at Craven County Hospital.

3. Well child care and EPSDT screening by public health nurses, nurse practitioners, and physicians. While family practice and pediatric residents in training concentrate on primary sick care, we feel it important that they participate in a well-organized preventive care program as well. Their response has been positive, for the most part.

4. Primary sick care in the clinic by nurse practitioners and physicians. In order to maintain the acute care skills of the nurse practitioners as well as allowing the physician trainees time for didactic instruction, the first one and one-half hours of clinic time each day are covered entirely by the practitioner staff with physician backup.

5. Twenty-four hour sick care coverage with the assistance of the Craven County Hospital Emergency Room physicians. Patients can reach an on-call public health clinic physician by calling a paging number at the hospital. Most patients with minor illness are screened first by the emergency room (ER) physician and then referred to the public health physician if necessary. Records of ER visits are reviewed daily by clinical staff, then incorporated into the child's medical records. We believe this significantly improves continuity of care. Because of the small number of resident trainees at present, arrangements have been made for private practitioners in the community to provide coverage for some nights. This will no longer be necessary when adequate numbers of residents are available. Nevertheless, because private physicians are often covering the services at night, patient use of telephone contact with physicians has not been encouraged.

6. Because of its university sponsorship, an educational resource for the community. This is a major advantage of medical school affiliation and, I very firmly believe, a major reason for the acceptance of this program in the community.

In the area of child abuse and neglect, the physician responsible for the primary care clinic is a certified Child Medical Examiner, and the clinic participates actively in the Child Medical Examiner Program.

I would like to review now some factors in what I call the "Recipe for Success," not to de-emphasize the problems that we had, but to explain why such a potentially hot political issue has been kept fairly cool. The first and most important item in the success of the program has been local physician support. It is the firm belief of the practicing pediatricians, as well as the members of the largest family practice group in the community, that the program has provided very significant relief from the burden of indigent patient care without competing with them. Along this line, it has been critically important to maintain a noncompetitive posture and to avoid any activities in the community that might suggest otherwise. It is important to emphasize that this is not a deception, as the clinic does not intend to interfere with private practice of medicine in the community. The sliding fee scale, which has a minimal financial contribution, has served as an effective deterrent to private patient utilization of the clinic. The provision of an educational-consultative service is also critical for the acquisition and maintenance of support from private practitioners. This establishes a positive relationship between the clinic, the medical school, and the community and affords busy practicing physicians the opportunity to renew educational interests. I should add that it is my strong personal view that the public health clinic physician must be able to relate to the practicing physicians professionally and socially in order to be successful in such a situation. I particularly feel that the establishment of clinical credibility is a necessity before one attempts to change or modify medical care practices in any community.

Second in our success recipe is the important item of community support. High visibility must be maintained by the clinic staff. Participation in community activities is a must. Furthermore, relationships must be established with other community service agencies, such as Mental Health, Department of Social Services, Sheriff's Office, County Management, etc. All of us have repeatedly realized that community services everywhere are poorly coordinated and very often duplicated. When positive working relationships are established with other agencies, the provision of services becomes more efficient, and inter-agency communication becomes simple, efficient, and productive.

Last on my recipe but very important is the item of public health department relationships. Dr. Verna Barefoot, our former director, is the one person most responsible for the success of the program. A positive, active, and respected health director is critical when a community service of this type is instituted. With the particular knowledge that a primary clinic such as ours may easily be perceived as a threat to private medical

practice, it is critical that the health director have a positive relationship with practicing community physicians. Furthermore, there are intradepartmental relationships that are absolutely critical. One of the most important is with the laboratory section, where a significantly expanded service must be provided if good primary care is to be given. Furthermore, the maternity section of the health department must be closely coordinated with the primary care section in order to provide optimal perinatal care. With the markedly increased importance of nutrition education as part of the Women, Infants and Children (WIC) Program, close coordination with the nutrition section is also most important. Readily available nutritional counselling is an advantage for the primary care giver. Our "recipe for success," then, involves the acquisition of local physician support, community support, and the cultivation of strong positive relationships within the public health department.

Problems have occurred in each of these areas, which I shall review briefly. In terms of relations between the private medical community and the clinic, the educational and noncompetitive posture of the program needs regular reinforcement. A good sense of humor has been a great advantage on both sides in this situation. Secondly, support within the public health department has at times also been a significant problem. For example, strained use of the lab services and the budget have at times caused potentially serious problems. It has been necessary to develop a number of laboratory time-savers and shortcuts and to have a detailed knowledge of services available through the state laboratory. Despite our efforts to solve many of these problems, laboratory personnel are often pushed to great limits on busy days. I have considered it important to encourage these personnel with regular "pats on the back." Periodic conflicts have occurred with all health department sections not engaged in primary care activity for the majority of the time. While primary care clinic personnel are accustomed to dealing with broken appointments and the tendency to drop in at convenient hours, other sections are often not so flexible. When gynecologic consultation, for example, is necessary, it is very difficult to obtain under the guidelines of the Maternity or Family Planning Clinic. If a young woman is having dysmenorrhea but is not interested in contraception, she cannot be seen by the gynecologist in Family Planning Clinic. Furthermore, she cannot be seen in Maternity Clinic since she is not pregnant. We are then compelled to seek consultation through the private community, which the patient cannot afford and therefore will often not get. Our situation also differs from other medical facilities in that total primary care is delivered in only one section. Other sections are often asked to participate in this care when they do not perceive it as appropriate. Furthermore, administrative and clerical personnel are often not accustomed to the variable workload in a primary care facility.

Despite these problems, it is my firm belief that a primary care service can be established in a public health setting without threatening or competing with local physicians. There are numerous problems in administering such a program, but none is insurmountable if the necessary sense of humor and commitment are present. Furthermore, I believe it is an effective way to reach a substantial number of patients in this and other counties who have no access to private medical care. This clinic has so far proved to be a positive experience for primary community physicians as well as for me and for the resident training program of the East Carolina University School of Medicine.

SPECIAL ARTICLE

Sterilization and the Mentally Handicapped Person

Roger McManus

MANY families of those who are mentally retarded fear that a retarded child will conceive as a result of sexual abuse or consensual sexual intercourse. The most readily apparent solution is sterilization. Yet procreation is one of the rights protected by the United States and North Carolina Constitutions. It is also susceptible to deprivation by overweening government. Thus, North Carolina law establishes safeguards against sterilization abuse. To protect their patients and themselves, physicians should become familiar with sterilization procedures established by law as they apply to the mentally handicapped, both those with mental retardation and those with mental illness.

VOLUNTARY STERILIZATION

Sterilization may be voluntary or involuntary. North Carolina General Statutes (sections 90-271 90-275) govern voluntary sterilization, which involves vasectomy or cutting the fallopian tubes. It requires a request in writing and informed consent by the patient. A legally valid consent is an informed and voluntary decision by a competent person. An adult is presumed to be competent unless a court has found them to be incompetent. A number of mentally handicapped adults are so obviously incapable of understanding and using information that they are *de facto* incompetent even though there has never been an adjudication. Nevertheless, most mentally handicapped adults are presumed to be capable of understanding sterilization. The statute specifically requires the patient's written request and a full and reasonable medical explanation by the physician or surgeon about the meaning and consequences of the operation. Presumably, such explanation would include a description of the operation, how well established it is, the probability of success, probable and possible risks and discomforts, any client followup obligations, and the freedom to ask questions and withdraw consent at any time.

If the person requesting to be sterilized is under age 18 and not married, the law also requires that the parent(s), guardian or "next friend of such minor" petition the juvenile court for a final determination.

A voluntary sterilization implies that the requesting patient be free from coercion, direct or implied. The physician should be sensitive to the fact that voluntariness for some mentally handicapped persons may be complicated by institutionalization, a lack of experience or access to independent advice, a greater susceptibility to contingencies, and a dependence-induced overeagerness to please. It is important to remember that often the person seeking the patient's consent is seen by the patient as having control over the patient. Moreover, many mentally handicapped people live in restrictive environments that encourage compliance. These factors do not mean that the person so affected cannot make a free decision, only that service providers should try to mitigate such coercive factors.

INVOLUNTARY STERILIZATION

North Carolina law also governs involuntary sterilization for the mentally handicapped (North Carolina General Statutes §35-36 §35-50). This statute applies in two situations: (a) a mentally ill or mentally retarded person does not want to be sterilized; or (b) a mentally ill or mentally retarded person may not disapprove of a sterilization but is not competent to make a voluntary decision. Most involuntary sterilizations are of the second type.

Typically, a parent or human service worker will become concerned that a mentally retarded woman will have an unplanned pregnancy as a result of sexual abuse, exploitation, or unadvised sexual activity. The concerned third party approaches a physician to perform the sterilization. Sometimes the physician will propose the sterilization. A physician might not realize that a court proceeding is required for the sterilization of an incompetent person and he or she might wrongfully do the sterilization without the proceeding. In such cases, the surgeon theoretically leaves himself open for malpractice and criminal charges.

The statute specifying the procedure for involuntary sterilization applies only to mentally handicapped individuals. Nevertheless, it has been found to be constitutional. The statute applies to mentally handicapped persons, regardless of

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age. It does not require a court proceeding if the sterilization is an incidental result of surgery for a different but therapeutic purpose such as removing diseased ovaries. Ending menses would not by itself be considered a sufficient separate therapeutic purpose unless perhaps the periods had proved to be severely traumatic to the patient and there seemed to be no less intrusive way to prevent such trauma in the future.

Upon compliance with its terms, the statute seems to authorize any contraceptive operation, other than castration, which is in the patient's best interest. It is often suggested that because of the personal care obligation imposed by the menstrual cycle, a hysterectomy would be more in the patient's best interests than an interruption of the fallopian tubes, particularly if the woman is not capable of caring for herself. Yet the risks associated with a hysterectomy greatly exceed those of tubal ligation. Moreover, many women regard the menstrual cycle as a positive experience, on balance, for feminist, spiritual, psychological and health reasons. Thus, although the custodian of the incompetent patient may welcome the end of a monthly personal care chore, it should not be assumed that this would be in the patient's best interest.

A similar consideration involves the least restrictive alternative principle. The constitution requires that if government is to deprive a person of a constitutional right (such as procreation) it must use the means which least restrict the person's rights. The same considerations which suggest that a hysterectomy may not be the sterilization procedure which is in the woman's best interest more strongly urge that a hysterectomy would seldom be the least restrictive alternative. Although the appellate and federal courts in North Carolina have not yet been asked to apply the constitution's least restrictive alternative principle to the question of hysterectomy versus tubal ligation, the courts' adoption of such reasoning is quite possible, were the issue to be brought before them.

An involuntary sterilization is brought before a local state district court when a petition is filed by: (1) the supervisor of a state institution if the patient is a resident there; or (2) the county director of social services if the patient is outside a state institution; or (3) parent(s) or guardian(s).

The district court may order the sterilization only if the judge finds by clear, strong, and convincing evidence that the subject is likely to engage in sexual activity without using contraceptive devices and that either: (1) a "defective" child is likely to be born; or (2) a child born could not be cared for by the parent. This standard is stricter than it might at first seem. The burden of proof is on the petitioner to show these factors. It is arguable that a judge could not fairly find clear, strong and convincing evidence that a person is likely to engage in sexual activity without using contraception unless the person has shown an interest in non-autonomous sexual activity and that there has been a valiant but unsuccessful effort to help the person use contraception. Seldom is such an effort made for a retarded person. At the least, this evidentiary requirement would seem to render the statute non-applicable to almost all pre-adolescents.

Even if these evidentiary hurdles were surmounted, it would remain for the petitioner to show by clear, strong, and convincing evidence the probability of a likely birth defect or inadequate parenting. Since "likely" means greater than a 50% chance, seldom would a petitioner be able to prove a birth defect. It would be easier to show that the expected child could not be cared for by the parent, particularly if the petition had been brought because the person was incompetent. Still, recent studies suggest that most mildly retarded and some other retarded people can care for children, particularly with help. The extent to which the courts must consider the possibilities of help from the person's relatives, friends, and human service agencies has not been answered. The least restrictive alternative principle might suggest that such help be considered.

Finally, it should be noted that no federal funds can be used to sterilize people under the age of 21, people who are institutionalized, or incompetent individuals. If a person has been declared incompetent by a court, however, federal funds could still be used for the person's sterilization if a court finds the person competent for that particular decision.

SPECIAL ARTICLE

Sexually Transmitted Diseases: Treatment Guidelines-Part III

This is the third in a series of three articles reprinted from the Centers for Disease Control's "Morbidity and Mortality Weekly Report" (MMWR), August 20, 1982, Vol. 31, No. 25.

HAEMOPHILUS DUCREYI INFECTION (CHANCROID)

Chancroid may be a more common cause of genital ulcers than presently recognized. The diagnosis is best made by isolation of *Haemophilus ducreyi* from ulcers and/or fluctuant nodes on appropriate selective medium.

Drug Regimens

Erythromycin: 500 mg, by mouth, 4 times a day

OR

Trimethoprim/sulfamethoxazole: double-strength tablet (160/800 mg), by mouth, twice a day

Therapy should be continued for a minimum of 10 days and until ulcers and/or lymph nodes have healed.

Lesion Management

Fluctuant lymph nodes should be aspirated through healthy adjacent normal skin. Incision and drainage or excision of nodes will delay healing and are contraindicated.

Apply compresses to ulcers to remove necrotic material.

Sexual Partners

Treat sexual partners with a 10-day course of one of the above regimens.

Note: Antimicrobial susceptibility testing should be done on *H. ducreyi* isolated from patients who do not respond to the recommended therapies.

LYMPHOGRANULOMA VENEREUM: GENITAL, INGUINAL, OR ANORECTAL

Infection with a lymphogranuloma venereum (LGV) serotype of *C. trachomatis* should be treated in the following way.

Drug Regimen of Choice

Tetracycline HCl: 500 mg, by mouth, 4 times a day for at least 2 weeks

Alternative Regimens

The following drugs are active against LGV serotypes *in vitro* but have not been evaluated extensively in culture-confirmed cases.

Doxycycline: 100 mg, by mouth, twice a day for at least 2 weeks

OR

Erythromycin: 500 mg, by mouth, 4 times a day for at least 2 weeks

OR

Sulfamethoxazole: 1.0 g, by mouth, twice a day for at least 2 weeks. Other sulfonamides can be used in equivalent dosage.

Lesion Management

Fluctuant lymph nodes should be aspirated as needed through healthy adjacent normal skin. Incision and drainage or excision of nodes will delay healing and are contraindicated.

Late sequelae such as stricture and/or fistula may require surgical intervention.

SCABIES

Adults and Older Children

Treatment

Lindane (1%): 1 oz of lotion, or 30 g of cream applied thinly to all areas of the body from the neck down and washed off thoroughly after 8 hours. *Not recommended for pregnant or lactating women.*

Alternative Therapies

Crotamiton (10%): applied to the entire body from the neck down nightly for 2 nights and washed off thoroughly 24 hours after the second application

OR

Sulfur (6%) in petrolatum: applied to the entire body from the neck down nightly for 3 nights. Patients may bathe before reapplying the drug and should bathe 24 hours after the final application.

Infants, Young Children (<10 Years Old), Pregnant and Lactating Women

Treat with one of the following:

Crotamiton (10%): as noted above

OR

Sulfur (6%): in petrolatum, as noted above

Contacts

Sexual contacts and close household contacts should be treated as above.

Special Considerations

Pruritus may persist for several

weeks after adequate therapy. A single re-treatment after 1 week may be appropriate if there is no clinical improvement. Additional weekly treatments are warranted only if live mites can be demonstrated.

Clothing or bed linen that may have been contaminated by the patient within the past 2 days should be washed and/or dried by machine (hot cycle in each) or dry cleaned.

PEDICULOSIS PUBIS

Drug Regimens

Lindane (1%) lotion or cream: applied in a thin layer to the infested and adjacent hairy areas and thoroughly washed off after 8 hours; or *lindane (1%) shampoo:* applied for 4 minutes and then thoroughly washed off. *Not recommended for pregnant or lactating women.*

OR

Pyrethrins and piperonyl butoxide (nonprescription): applied to the infested and adjacent hairy area and washed off after 10 minutes.

Re-treatment is indicated after 7 days if lice are found or eggs are observed at the hair-skin junction. Clothing or bed linen that may have been contaminated by the patient within the past 2 days should be washed and/or dried by machine (hot cycle in each) or dry cleaned.

Contacts

Sexual contacts should be treated as above.

Special Considerations

Pediculosis of the eyelashes should be treated by the application of occlusive ophthalmic ointment to the eyelid margins twice daily for 10 days to smother lice and nits. Lindane or other drugs should not be applied to the eyes.

ENTERIC INFECTIONS

Treatment of proctitis and enterocolitis should be based on etiologic diagnosis. Appropriate gastroenterologic work up should be pursued in all cases. Asymptomatic, infected individuals for whom anal-oral contact is a sexual practice should be treated in accordance with recommendations for symptomatic individuals, as should persons whose work or social situation is associated with a likelihood of transmission (e.g., food handlers, hospital workers, day-care-center employees, etc.). Sexual partners at risk for fecal-oral transmission should be evaluated. Sexual transmission does not preclude the possibility of nonvenereal transmission as well. Careful attention to hand washing and other hygienic practices is strongly urged.

Campylobacter jejuni

The drug of choice for symptomatic enterocolitis or proctitis is:

Erythromycin: 500 mg, by mouth, 4 times a day for 7 days

Shigella Species

Antibiotic choice must be based on the sensitivity pattern of the isolate. Immediate treatment, when required, may be based on local sensitivity patterns. Current national sensitivity patterns suggest that the drug of choice is:

Trimethoprim/sulfamethoxazole: double-strength tablet (160/800 mg), by mouth, twice daily for 7 days

An alternative is ampicillin 500 mg, by mouth, 4 times a day for 7 days, although the variability of regional sensitivity of shigellae to ampicillin must be considered. Amoxicillin is *not* an acceptable substitute.

Nontyphoidal *Salmonella* Species

Treatment for asymptomatic carriage or uncomplicated symptomatic infection is not generally recommended. Sexual partners should be evaluated.

Amebiasis

Laboratory diagnosis may be complicated by prior use of antidiarrheal agents and antibiotics such as tetracycline or erythromycin.

Symptomatic Patients

In symptomatic patients the regimen of choice consists of a systemic drug plus a lumenal amebicide:

Metronidazole: 750 mg, by mouth, 3 times a day for 5-10 days

PLUS EITHER

Iodoquinol (diiodohydroxyquin): 650 mg, by mouth, 3 times a day for 20 days; OR *diloxanide furoate:* 500 mg, by mouth, 3 times a day for 10 days

An alternative would be to use metronidazole alone followed sequentially by one of the lumenal amebicides if clinical cure is not achieved.

The regimen of second choice is:

Paromomycin: 25-30 mg/kg/day in 3 divided doses for 7 days.*

This drug is used alone. Although primarily a lumenal amebicide, it has been noted to have superficial tissue effect.

Severe disease or extraintestinal illness should prompt appropriate medical consultation and referral.

The risk of infection after rape, while unknown, is thought to be low. If prophylaxis is to be administered because the physician feels it is indicated or because the patient requests it, the following should be used.

Tetracycline: 500 mg, by mouth, 4 times a day for at least 7 days

OR

Doxycycline: 100 mg, by mouth, twice a day for at least 7 days

Patients who are allergic to tetracycline and pregnant women should be treated with:

Amoxicillin/ampicillin: amoxicillin 3.0 g or ampicillin 3.5 g, each given with 1.0 g of probenecid as a single oral dose.

Patients should be seen for medical follow-up in 7 days, and the aforementioned studies, except for the serologic test for syphilis, repeated. A serologic test for syphilis 6 weeks after the incident is important in cases of assault by individuals who are at high risk for syphilis.

Every effort should be made to establish whether the assailant is infected with an STD. Victims should receive treatment for exposure to an STD that is documented in the assailant.

Child Abuse

Any sexually transmitted infection in a child should be considered as evidence of sexual abuse until proven otherwise. Any child with a sexually transmitted infection, and any child or teenager who reports sexual abuse, should be reported to the appropriate authorities for investigation of possible sexual abuse. Sexually abused children are best managed by a team of professionals experienced in addressing their phy-

*Available through CDC.

sical and psychological needs.

The risk of acquisition of a sexually transmitted infection by child victims of sexual assault or abuse is believed to be lower than for adult victims. Such children should be evaluated for STD pathogens as described under the guidelines for management of rape victims, but with particular sensitivity to clinical procedures that may be traumatic to them.

Treatment is indicated when disease is present. However, prophylactic treatment before diagnosis is usually not indicated unless there is evidence that the assailant is infected.

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See next page for brief summary of prescribing information.

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Dental pain and episiotomy pain are predictable, reproducible "standards" that make possible objective comparisons of effectiveness of different analgesic agents.

- Measured against 15, 30 and 60 mg doses of codeine phosphate in a double-blind study of 287 patients, 400-mg doses of ibuprofen proved "significantly better than codeine on almost all pain intensity, degree of relief and duration of analgesia parameters."[2]
- Measured against a propoxyphene-acetaminophen combination for pain relief after 3rd molar extractions, ibuprofen proved equally effective and caused fewer side effects. Ibuprofen was associated with faster recovery, evidenced by more rapid reduction of trismus and return to normal function.[3]
- Measured against post-episiotomy pain in 30 patients, "ibuprofen was effective in treating the swelling as well as pain...during the first and worst days. Therefore, it is not only the analgesic but also the anti-inflammatory effect of ibuprofen that are the beneficial factors..."[4]

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• single-entity, peripheral-acting analgesia	• combined drugs act partly through central opioid pathways
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• better tolerated than aspirin	• combined side effects of two drugs- warning required about driving or operating machinery; possible resp tory depression with alcohol, tranq izers, other common medications
• no narcotic risk, red tape, records	• narcotic precautions required
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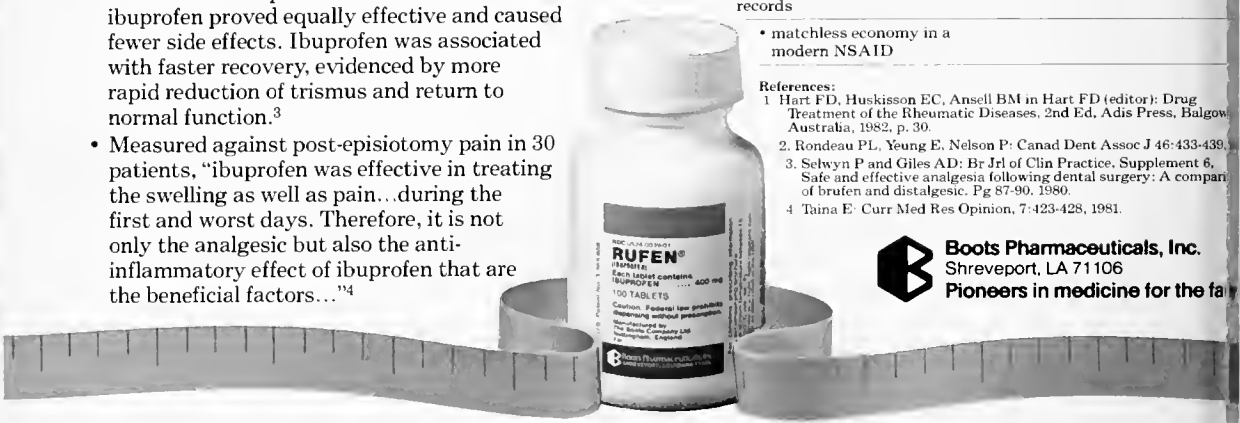

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INDICATIONS AND USAGE Treatment of signs and symptoms of rheumatoid arthritis and osteoarthritis during acute flares and in the long-term management of these diseases. Safety and effectiveness have no been established for Functional Class IV rheumatoid arthritis.

Relief of mild to moderate pain Treatment of primary dysmenorrhea.

CONTRAINDICATIONS Patients hypersensitive to ibuprofen, or with the syndrome of nasal polyps, angio-edema and bronchospastic reactivity to aspirin or other nonsteroidal anti-inflammatory drugs (see WARNIN

WARNINGS Anaphylactoid reactions have occurred in patients hypersensitive to aspirin (see CONTRAINDICATIONS). Peptic ulceration and gastrointestinal bleeding, sometimes severe, have been reported Per ulceration, perforation, or gastrointestinal bleeding can end fatally, however, an association has not been established. Rufen should be given under close supervision to patients with a history of upper gastro-intestinal tract disease, and only after consulting the ADVERSE REACTIONS.

In patients with active peptic ulcer and active rheumatoid arthritis, nonulcerogenic drugs, such as gold, should be attempted. If Rufen must be given, the patient should be under close supervision for signs of ulc perforation or gastrointestinal bleeding

PRECAUTIONS Blurred and/or diminished vision, scotomata, and/or changes in color vision have been reported. If developed, discontinue Rufen and administer an ophthalmologic examination.

Fluid retention and edema have been associated with Rufen, caution should be used in patients with a history of cardiac decompensation

Rufen can inhibit platelet aggregation and prolong bleeding time. Use with caution in patients with intrinsic coagulation defects and those taking anticoagulants

Patients should report signs or symptoms of gastrointestinal ulceration or bleeding, blurred vision or other eye symptoms, skin rash, weight gain or edema.

To avoid exacerbation of disease or adrenal insufficiency, patients on prolonged corticosteroid therapy, this therapy should be tapered slowly when adding Rufen.

DRUG INTERACTION *Coumarin-type anticoagulants* The physician should be cautious when administering Rufen to patients on anticoagulants.

Aspirin Concomitant use may decrease Rufen blood levels.

PREGNANCY AND NURSING MOTHERS Rufen should not be taken during pregnancy nor by nursing mothers

ADVERSE REACTIONS. Incidence greater than 1%. Gastrointestinal: The most frequent adverse reaction is gastrointestinal (4 to 16%). Includes nausea*, epigastric pain*, heartburn*, diarrhea, abdominal dist nausea and vomiting, indigestion, constipation, abdominal cramps or pain, fullness of GI tract (bloating and flatulence). Central Nervous System: dizziness*, headache, nervousness. Dermatologic: rash* (including maculopapular type), pruritus. Special Senses: tinnitus. Metabolic: decreased appetite, edema, fluid retention. Fluid retention generally responds promptly to drug discontinuation (see PRECAUTIONS) *Incidence 3% to 9%

Incidence less than 1 in 100. Gastrointestinal: gastric or duodenal ulcer with bleeding and/or perforation, hemorrhage, melena. Central Nervous System: depression, insomnia, confusion, emotional lability, som nolence, aseptic meningitis with fever and coma. Dermatologic: vesiculobullous eruptions, urticaria, erythema multiforme, Stevens-Johnson syndrome and alopecia. *Special Senses:* hearing loss, amblyopia (blurred and/or diminished vision, scotomata and/or changes in color vision) (see PRECAUTIONS). Hematologic: neutropenia, agranulocytosis, aplastic anemia, hemolytic anemia (sometimes Coombs' positive) thrombocytopenia with or without purpura, eosinophilia, decreases in hemoglobin and hematocrit. Cardiovascular: congestive heart failure in patients with marginal cardiac function, elevated blood pressure. Alle syndrome of abdominal pain, fever, chills, nausea and vomiting, anaphylaxis, bronchospasms (see CONTRAINDICATIONS). Renal: acute renal failure in patients with preexisting significantly impaired renal funct decreased creatinine clearance, polyuria, azotemia, cystitis, hematuria. Miscellaneous: dry eyes and mouth, gingival ulcers, rhinitis.

Causal relationship unknown. Gastrointestinal: pancreatitis. Central Nervous System: paresthesias, hallucinations, dream abnormalities, pseudotumor cerebri. Dermatologic: toxic epidermal necrolysis, photo-allergic skin reactions. Special Senses: conjunctivitis, diplopia, optic neuritis. Hematologic: bleeding episodes. Allergic: serum sickness, lupus erythematosus syndrome, Henoch-Schonlein vasculitis. Endocrine gynecomastia, hypoglycemia. Cardiovascular: arrhythmias (sinus tachycardia, bradycardia, and palpitations). Renal: renal papillary necrosis.

OVERDOSAGE. Acute overdosage, the stomach should be emptied. Rufen is acidic and excreted in the urine, alkaline diuresis may benefit.

DOSAGE AND ADMINISTRATION Rheumatoid arthritis and osteoarthritis, including flareups of chronic disease. Suggested dosage 400 mg t.i.d. or q.i.d.

Dysmenorrhea 400 mg every 4 hours as necessary

Mild to moderate pain 400 mg every 4 to 6 hours as necessary for the relief of pain. *Do not exceed 2,400 mg per day*

CAUTION: Federal law prohibits dispensing without prescription

Toxic Encounters of the Dangerous Kind

"YES, VIRGINIA, THERE IS NO TOOTH FAIRY" — CLONIDINE POISONING

During the process of maturing we all have to give up some of our illusions and surrender to reality, e.g., the Easter Bunny, Santa Claus, the Federal Government. This maturation must occur in health professionals as well; there are very few true pathognomonic clinical features or *sine qua nons*. We are fairly well indoctrinated by now that when you see a patient of any age with the triad **miosis, coma and depressed respirations,** the diagnosis is "narcotic" overdosage and the administration of naloxone (Narcan®) must follow "as the night the day." However, some recent experiences of ours and others in the poison business reveal that there are other toxins that can mimic the "narcotic triad"; one of the best is clonidine (Catopres®).

Clonidine hydrochloride is currently being recommended as an antihypertensive, in the prophylaxis of migraine headaches, and in the "flushing" secondary to the menopausal syndrome. This drug acts centrally by stimulating alpha-adrenergic receptors and causing a reduction in sympathetic tone as well as peripherally blocking alpha-adrenergic receptors and reducing vascular reactivity. In some respects clonidine affects the CNS in a manner similar to the phenothiazine chlorpromazine (Thorazine®), i.e., impaired consciousness, decreased body temperature, decreased motor activity, and dryness of mouth. This drug is similar in structure to some other alpha-adrenergic blocking agents such as tolazoline (Priscoline®) or phentolamine (Regitine®).

Clonidine poisoning seems to be increasing in children. This should not be a surprise. This poisoning is a classic example of what potential catastrophes can happen at Grandma's house. It has been stated in the literature that the most dangerous dwelling in a preschool child's environment is the home of the grandparents. After all, if grandparents are taking any medications at all they usually involve some relatively powerful drug for chronic diseases such as hypertension, arthritis, heart disease, etc. — and not baby aspirin, children's cough medicine and the like. If a child has been poisoned with a drug that you suspect is a cardiovascular medication, check the grandparent's home carefully. In my experience this is very rewarding. The answer is often quickly available, allowing you to treat the poisoned patient effectively. This whole business of poisoning at Grandma's demands your recommendation that all dwellings where preschool children live or frequently visit have a bottle of syrup of ipecac on hand.

The clinical features of clonidine overdose are somewhat predictable based on its alpha-adrenergic agonist activity, i.e., bradycardia, hypotension (which can be profound), a peculiar gasping or sighing, depressed respiratory pattern, impaired consciousness including coma, miosis, and hypotonia. As in almost all drug overdoses, host responses can differ: therefore, some patients with clonidine overdose are hypertensive or normotensive, are agitated, have seizures, have mydriasis, and are hypothermic. The classical picture of clonidine overdose resembles very closely a narcotic overdose. The clinical features of overdose occur quite rapidly (within 30-60 minutes) and usually persist for 24-36 hours. The mean toxic dose in adults is approximately 2.1 mg and in children 0.5 mg, although dose correlation with toxicity remains unclear at this time.

It should not be shocking to those who read this that the treatment is controversial. Please remember that, although the morbidity secondary to clonidine overdose can be scary indeed, mortality is quite uncommon. Here we have another good example where trying not to do harm and using good clinical judgment should carry the day. The emergency treatment consists of gastric emptying followed by activated charcoal and a saline cathartic. Needless to say, blood pressure and heart rate must be monitored and respiration must be supported. The specific pathological disruptions of homeostasis could be conservatively treated as follows. **Hypotension:** most patients will respond to i.v. fluids alone. It is for only severe recalcitrant hypotension that you would consider i.v. dopamine. **Bradycardia:** usually responds quite well to parenteral atropine (15 mcg/kg); probably best to use this when the heart rate is less than 60 beats/min. **Coma:** probably best to give no medication for this. Naloxone (Narcan) has been used to reverse the coma and rare apneic episodes of this poisoning. The reviews are mixed. Naloxone, however, is safe and using it will probably do no harm. Regardless of treatment, return of consciousness occurs within 24-48 hours. **Hypertension:** for this relatively rare occurrence, suggestions for treatment include diazoxide and/or furosemide to sodium nitroprusside to phentolamine. Be careful here; the hypertension is often short-lived and aggressive treatment can result in profound hypotension. Forced diuresis does not seem to help any of the adverse features of this overdose.

OFFICIAL CALL
HOUSE OF DELEGATES

HOUSE OF DELEGATES
Meetings Scheduled

Notice to: Delegates, Alternate Delegates, Officials of the North Carolina Medical Society, and Presidents and Secretaries of county medical societies.

Sessions of the HOUSE OF DELEGATES will convene in the Cardinal Ballroom, Pinehurst Hotel, Pinehurst, North Carolina, at the following times:

Thursday, May 5, 1983 — 10:00 a.m. — Opening Session
Saturday, May 7, 1983 — 2:00 p.m. — Second Session

A member of the CREDENTIALS COMMITTEE will be present at the Desk in the Hotel Lobby, Wednesday, May 4, 1983, 3:00 p.m. to 5 p.m., and Thursday, May 5, 1983, 8:30 a.m. to 10:00 a.m. to certify Delegates. Delegates are urged to bring their Credential Cards for presentation at the Registration Desk. Delegate Badges must be worn to be seated in the HOUSE OF DELEGATES.

REFERENCE COMMITTEE HEARINGS

Reference Committee hearings are scheduled to begin Thursday, May 5, 1983, at 2:00 p.m.

MARSHALL S. REDDING, M.D., President
HENRY J. CARR, JR., M.D., Speaker
JOHN T. DEES, M.D., Secretary
WILLIAM N. HILLIARD, Executive Director

Probably one of the most controversial aspects of the management of clonidine overdose involves the use of tolazoline (Priscoline®), an alpha-adrenergic blocking agent. In many literature sources, tolazoline is listed as the drug of choice in significant clonidine overdose. Other more recent authorities are less enchanted with this drug. We did not use tolazoline on our most recent patients with clonidine overdose and we feel that conservative management is the way to go — i.e., fluids for hypotension and atropine for bradycardia.

Next time you see a patient with coma, miosis and respiratory depression, think of narcotic overdose and administer naloxone but, if the patient fails to respond properly, remember clonidine overdose and ask if Grandma or Grandpa have pills for "high blood."

RONALD B. MACK, M.D.
Associate Professor of Pediatrics,
Bowman Gray School of Medicine
Chairman, Committee on Accidents and
Poison Prevention, NC Chapter of
the American Academy of Pediatrics

Editorials

CHANGING THE GUARD

Since its founding by Dr. Wingate Johnson in 1940, the NORTH CAROLINA MEDICAL JOURNAL's editorial office has been in Winston-Salem. During that time the North Carolina Medical Society has increased in numbers almost beyond count and has changed from a body dominated by and representative of general practitioners to one reflecting and reconciling the views of many specialists and increasingly of both town and gown, community and academic physician.

During these four decades medicine has been woven into the entire fabric of daily life, not simply hospital and office, but even into regulating agencies of government and into the marketplace where the short and long-term medical consequences of commercial matters must be most carefully considered. Witness only the position of tobacco in 1940 and in 1983 and the recent litigation about asbestos and asbestosis which has led the Manville Corporation to file for bankruptcy to escape claims, outstanding and to be filed (*Wall Street Journal*, August 27, 1982). The field of medicine has become so broad that our profession's publications have been hard pressed to know their roles much less to fulfill them. Now with every field a specialty, comprised of rapidly proliferating subspecialties, the competition for the reader's eye and ear has become extremely intense.

In such times what is to be expected of a state medical journal? How can it best represent its parent? How is the NCMJ to survive as an effective instrument of medical education? What cost is acceptable to the sponsoring society? What sort of and how much attention should be devoted to socioeconomic, political and administrative matters in our pages?

Eight years ago when I succeeded Dr. Robert Prichard to become the third editor of this series of NORTH CAROLINA MEDICAL JOURNALS,* the same questions were paramount in my mind and still concern me greatly. Now as then I believe in the utter necessity of a state medical journal as an organ for the contributing and the reading physician, as a means of communication between our members, as a means of considering matters peculiar to our own state and as an archive for those who follow us.

Each change in editor of course brings such a declaration of faith in medicine, such a statement of editorial visions and aspirations and a tribute to our calling. Eventually although the vision remains clear, the energies lag, other demands encroach and the realization comes that it is time for a change. Hence the editorial office now goes east to Durham.

Our new editor will be Dr. Eugene Stead who is by temperament, training, talent and achievement uniquely qualified for the task. He is an active teacher, an effective and highly respected administrator, an excellent problem solver in the laboratory and at the bedside, and a person who knows how to get the best from others by giving his own best. May his tenure be as satisfying to him as mine has been to me.

J.H.F.

POSITION PAPER ON CHEMONUCLEOLYSIS THE NORTH CAROLINA NEUROSURGICAL SOCIETY

Chemonucleolysis using chymopapain is a recent development in the treatment of intervertebral disc disease which has been evaluated over the past decade. Neurosurgeons in the United States and Canada have participated in these evaluations. At the present time, the FDA is considering for release at least two preparations of chymopapain for clinical use. The American Association of Neurological Surgeons, after review of the available data, has come to the conclusion that "the use of chymopapain in certain conditions affecting the lumbar intervertebral disc seems relatively safe, attested by the complication rate of less than 2%. However, data are not available in the scientific literature which would permit an evaluation of the efficacy of chymopapain." A number of claims have been made for beneficial results from injection of these materials into the intervertebral discs but the numbers of well-documented cases are small, controls are few, and long-term followup is almost unavailable. The true role of interdiscal chemonucleolysis will have to await the results of ongoing and future clinical studies. "The American Association of Neurological Surgeons believes the availability and relative simplicity of this procedure for lumbar disc disease combined with the ubiquitous nature of the disease itself may establish a condition for abuse. Chymopapain should only be used in a hospital setting, by physicians competent by experience and training in the diagnosis of lumbar disc disease and all acceptable treatment modalities."

The North Carolina Neurosurgical Society has con-

*The first NORTH CAROLINA MEDICAL JOURNAL was founded in 1878 and endured through 1899. The Medical Society of North Carolina assumed no responsibility but in 1898 did publish its transactions in the periodical

vened a special committee to review the clinical and scientific basis of chemonucleolysis and to recommend guidelines for the use of this modality in North Carolina. Our recommendations are as follows:

1. The drug should only be available through a hospital pharmacy, for use in the hospital.

2. The procedure should be credentialed in individual hospitals as a surgical procedure.

3. Credentials for its use should be granted only to those surgeons who by formal training and experience can provide the full range of acceptable treatments for lumbar disc disease, from conservative treatment to surgical procedures. Only these surgeons have the expertise to identify those cases amenable to interdiscal chemonucleolysis and to differentiate them from a wider range of causes of chronic back pain.

4. An anesthesiologist qualified in prevention and management of anaphylaxis should be on hand during the procedure. The procedure should be done in an operating room or in a radiology suite with adequate capabilities for general anesthesia.

5. While acute complications of interdiscal chemonucleolysis appear infrequent, there remains a serious possibility of acceleration of chronic degenerative disc disease in patients so treated. The results of these injections would only be apparent after many years of experience or followup. Therefore, we recommend that all physicians using this drug agree to record data on these patients in a form compatible with subsequent recall and evaluation. The recommendations for this evaluation will be forthcoming.

The North Carolina Neurosurgical Society strongly recommends that hospital staffs throughout the state adopt guidelines similiar to those stated above in order that the use of chemonucleolysis be safe and rational and to develop a perspective of its correct role and long-term effects in treatment of intervertebral disc disease.

BRAVE NEW WORLD: THE NEW NURSE

Last year the National Commission on Nursing published its initial report and preliminary recommendations which have already been welcomed with great enthusiasm by some.[1] The commission, created in 1980 and sponsored by the American Hospital Association, Hospital Research and Educational Trust and American Hospital Supply Corporation, is made up of 34 health professionals — physicians, nurses, administrators, educators, third party representatives and others including one sociologist — from 19 states and the District of Columbia. It began its deliberations in September 1980 but so far has not sought to define nursing practice nor to seek information from the 25% of active nurses who work outside hospitals, at least not to the date of publication of the report.

Despite, or perhaps because of, these shortcomings, the commission has struggled mightily and has come forth with an almost unintelligible report. It is a remarkable compendium of cliches, buzz words, circumlocutions, and tautologies, the literary devices writers use to obscure issues while aspiring to profundity. A firm grasp of the obvious was achieved; the commission is aware that a seller's market in nursing exists because of increased needs and fewer graduates. They are also aware that specialization has come to nursing — of necessity — but they were unable to determine the dimensions of the problem or to define methods for accurate assessment.

The work is replete with the standard jargon: decision-making, accountability, organizational modes, stress-producing, cost-effective, care delivery, parameters, commensurate, credentialing. Of course they are concerned with adequate pay for nurses and opportunities for personal betterment. To be sure respect and trust are essential and certainly "creativity in designing organizational modes" is desirable as are proper "amounts of academic aptitude." Innovating and implementing consensus on "enhancing educational sequences" based on "masterly learning concepts" permitting "innovation in educational methodology" will facilitate "educational articulation between components of the educational system" in order to allay alienation and circumvent role ambiguity, limited only by "cost-containment imperatives." "Educational intervention . . . to rectify deficits . . ." in "bicultural training programs" will utilize "team leading skills," and "interaction modelling" to "implement cooperative solutions" thereby culminating through derived "orientation competencies" in an "organizational structure for information processes supporting care." Already "state master plans . . . have been developed in some states" within a framework of "realistic clinical performance expectation."

With such an infrastructure then the rubrics subserving the new nurse can be adumbrated and she can enter a segment of society populated by "fully self-actualized adults."[2] Peterson has crystallized for us the beliefs, motivational drives for actualization and entitlements, has hoisted the colors of the movement in a moving manifesto which explains what some of the new nurses believe about their profession.

"1. Nursing will evolve with its own theory and its own practice based on research.

2. Nursing holds equal right for consideration as head of the health team. This role should and can shift among health professionals, in various circumstances.

3. Nursing is a discipline with vocabulary, principles, and procedures of its own, unique and separate from those of medicine. It is not a subentity under medicine.

4. Nursing will ultimately be fully developed as a discipline and profession with power and status equal to those of medicine, law, engineering, dentistry, and other professions.

5. Nursing has the right and responsibility to control its own education, credentials, monitoring, and practice systems.

In the treatment of your overweight patients...

Four ways to control the overactive appetite

COMMITMENT to lose weight

'MELFIAT® 105 once a day during the initial weeks of therapy

DIET tailored for each patient's needs

EXERCISE to improve physical fitness

When your overweight patients need an effective, short-term anorexiant, MELFIAT® 105 (phendimetrazine tartrate) is an excellent choice. According to a NIDA (National Institute on Drug Abuse) report, phendimetrazine appears to have less abuse potential than the amphetamines and certain other anorexiants.[1] And MELFIAT® 105 also offers your patients the convenience of once-a-day morning dosage.

Reference: 1. Sheu YS, Ferguson JA, Cooper JR. *Evaluation of the Abuse Liability of Diethylpropion, Phendimetrazine, and Phentermine*, unclassified document. ADAMHA/HHS Office of Medical and Professional Affairs, NIDA, 1980, pp 10-15

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Please see brief summary of prescribing information on the next page.

6. Nursing will move to patterns of independent nursing practice, whether for hire by institutions or for selection by the client."

Our nurses deserve a much, much better report than this — one which does not provoke such manifestos from its exponents, one which simply and directly addresses the issues and does not hide behind limp phrases and languishing stereotypes. No wonder the commission noted what they considered a tragic fragmentation among nurses reluctant to join the new army. According to Peterson, medicine must "reach its own full level of professional maturity and accept nursing as an emerging adult profession — for what it is and will be, not what it was 20 years ago." Nursing emerged as an adult profession many more than 20 years ago. And professional maturity, in a dynamic profession, may never be obtainable, only sought after with all the resources we can muster.

J.H.F.

References

1 The National Commission on Nursing. Initial report and preliminary recommendations. Chicago: Hospital Research and Educational Trust, 80 pp.
2 Peterson CL. The new nurse and the new physician. Ann Intern Med 1982;96:374-375.

Stormy Weather

Let Ru-Tuss® Help Your "Stormy" Patient Come Closer to Spring

Prompt, effective treatment with Ru-Tuss® tablets offers welcome relief to winter-cold patients. Ru-Tuss® tablets ease congestion, relieve respiratory-tract itch and the need to sneeze.

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Each prolonged action tablet contains: Phenylephrine Hydrochloride 25 mg • Phenylpropanolamine Hydrochloride 50 mg • Chlorpheniramine Maleate 8 mg • Hyoscyamine Sulfate 0.19 mg • Atropine Sulfate 0.04 mg • Scopolamine Hydrobromide 0.01 mg • Each Ru-Tuss® tablet acts continuously for 10 to 12 hours

- vasoconstrictor, antihistaminic actions
- rapid and prolonged relief of nasal and sinus congestion
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As a personal service from Boots: *A weather* forecast for anywhere in North America, individually provided by a professional meteorologist. See your Boots representative for toll free access.

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Brief Summary of Prescribing Information (see attached)

Brief Summary of prescribing information

RU-TUSS®

TABLETS

INDICATIONS AND USAGE: Ru-Tuss Tablets provide relief of the symptoms resulting from irritation of sinus, nasal and upper respiratory tract tissues.

CONTRAINDICATIONS: Hypersensitivity to antihistamines or sympathomimetics. Ru-Tuss Tablets are contraindicated in children under 12 years of age and in patients with glaucoma, bronchial asthma and women who are pregnant. Concomitant use of MAO inhibitors is contraindicated.

WARNINGS: Ru-Tuss Tablets may cause drowsiness. Patients should be warned of possible additive effects caused by taking antihistamines with alcohol, hypnotics, sedatives or tranquilizers.

PRECAUTIONS: Ru-Tuss Tablets contain belladonna alkaloids, and must be administered with care to those patients with urinary bladder neck obstruction. Caution should be exercised when Ru-Tuss Tablets are given to patients with hypertension, cardiac or peripheral vascular disease or hyperthyroidism. Patients should avoid driving a motor vehicle or operating dangerous machinery (See WARNINGS:).

OVERDOSAGE: Since the action of sustained release products may continue for as long as 12 hours, treatment of overdoses directed at reversing the effects of the drug and supporting the patient should be maintained for at least that length of time. Saline cathartics are useful for hastening evacuation of unreleased medication. In children and infants, antihistamine overdosage may produce convulsions and death.

ADVERSE REACTIONS: Hypersensitivity reactions such as rash, urticaria, leukopenia agranulocytosis, and thrombocytopenia may occur. Other adverse reactions to Ru-Tuss Tablets may be drowsiness, lassitude, giddiness, dryness of the mucous membranes, tightness of the chest, thickening of bronchial secretions, urinary frequency and dysuria, palpitation, tachycardia, hypotension/hypertension, faintness, dizziness, tinnitus, headache, incoordination, visual disturbances, mydriasis, xerostomia, blurred vision, anorexia, nausea, vomiting, diarrhea, constipation, epigastric distress, hyperirritability, nervousness, dizziness and insomnia. Large overdoses may cause tachypnea, delirium, fever, stupor, coma and respiratory failure.

DOSAGE AND ADMINISTRATION: Adults and children over 12 years of age, one tablet morning and evening. Not recommended for children under 12 years of age. Tablets are to be swallowed whole.

Federal law prohibits dispensing without prescription.

Boots Pharmaceuticals, Inc.
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Bulletin Board

What? When? Where?

Please note: 1. The Continuing Medical Education Programs at Bowman Gray, Duke, East Carolina and UNC Schools of Medicine, Dorothea Dix, and Burroughs Wellcome Company are accredited by the American Medical Association. Therefore CME programs sponsored or cosponsored by these schools automatically qualify for AMA Category 1 credit toward the AMA's Physician Recognition Award, and for North Carolina Medical Society Category A credit. Where AAFP credit has been obtained, this also is indicated. 2. The "place" and "sponsor" are indicated for a program only when these differ from the place and source to write "for information."

In State

February 5

"Ninth Annual William Shelley Lecture and Seminar" Liver Disease, Drs. John Boitnott and Willis Madry
Place: Charlotte
Credit: 6 hours
Info: Larry Dee, M.D., P.O. Box 32861, Charlotte Memorial Hospital, Charlotte, NC 28232, 704/331-2121

February 14-18

"Microsurgery Workshop"
Place: Durham
Fee: $600 ($550 for Resident in Training)
Credit: 40 hours
Info: Donald Serafin, M.D. P.O. Box 3372, Duke University Medical Center, Durham, NC 27710

February 16

"Vitamins Amino Acids Trace Elements"
Place: Sanford
Fee: $9
Credit: 3½ hours, AMA Category 1
Info: R. S. Cline, M.D., Central Carolina Hospital, 1135 Carthage Street, Sanford, NC 27330

February 20-23

"Improving Residency Rotations: Curriculum Planning and Negotiations"
Place: Rougemont
Credit: 20 hours
Info: Katharine Munning, Ph.D., Duke-Watts Family Medicine Program, 407 Crutchfield Street, Durham, NC 27704, 919/471-2571

February 21-23

"Selected Topics For the Practicing Clinician"
Place Durham
Info: Cindi Easterling, Office of Continuing Medical Education, Duke University Medical Center, Box 3306, Durham, NC 27710, 919 684-6485

February

"1st District Medical Society Post Graduate Course"
Place: Edenton, Elizabeth City and Ahoskie
Info: W. B. Wood, M.D., Director CME, 231 MacNider 202H, UNC School of Medicine, Chapel Hill, NC 27514, 919/962-2118

March 3-5

"Diving Accident and Hyperbaric Oxygen Treatment"
Place: Durham
Fee: $280
Credit: 22 hours
Info: Yancey Mebane, M.D., Duke University Medical Center, Box 3823, Durham, NC 27710, 919 684-5514

March 9

"Family Medicine and the Elderly Patient"
Place: Greenville
Fee: $50
Info: Edwin W. Monroe, M.D., P.O. Box 7224, Greenville, NC 27834, 919 758-5200

March 9-12

"Internal Medicine 1983"
Place: Chapel Hill
Fee: $175
Info: W. B. Wood, M.D., Director CME, 231 MacNider 202H, UNC School of Medicine, Chapel Hill, NC 27514, 919/962-2118

March 12

"Fundamentals of Hazardous Waste Materials"
Place: Winston-Salem
Fee: $40
Credit: 5 hours, AMA Category 1
Info: Emery C. Miller, M.D., Bowman Gray School of Medicine, Winston-Salem, NC 27103, 919 748-4450

March 24-25

"Seventh Annual Cancer Research Symposium: The Development of Target-Oriented Anticancer Drugs"
Place: Chapel Hill
Info: W. B. Wood, M.D., Director CME, 231 MacNider 202H, UNC School of Medicine, Chapel Hill, NC 27514, 919/962-2118

March 24-26
"Gynecologic Surgery"
Place: Wrightsville Beach
Fee: $175
Info: W. B. Wood, M.D., Director CME, 231 MacNider 202H, UNC School of Medicine, Chapel Hill, NC 27514, 919/962-2118

March 24-27
"Eighth Annual Update in Diagnostic Imaging"
Place: Winston-Salem
Fee: $250
Credit: 25 hours, AMA Category 1
Info: Emery C. Miller, M.D., Bowman Gray School of Medicine, Winston-Salem, NC 27103, 919/748-4450

March 27-30
"Administrative Shells: Faculty as Managers"
Place: Rougemont
Credit: 20 hours
Info: Katharine Munning, Ph.D., Duke-Watts Family Medicine Program, 407 Crutchfield Street, Durham, NC 27704, 919/471-2571

April 8-9
"Frank R. Lock Symposium in Obstetrics and Gynecology"
Place: Winston-Salem
Fee: $150
Credit: 9 hours, AMA Category 1
Info: Emery C. Miller, Bowman Gray School of Medicine, Winston-Salem, NC 27103, 919/748-4450

April 8-9
"Carolina Ocutome Workshop"
Place: Chapel Hill
Fee: $500
Info: W. B. Wood, M.D., Director CME, 231 MacNider 202H, UNC School of Medicine, Chapel Hill, NC 27514, 919/962-2118

April 13
"Recent Knowledge and Practical Pointers in Office Rheumatology"
Place: Greenville
Fee: $50
Info: Edwin W. Monroe, M.D., P.O. Box 7224, Greenville, NC 27834, 919/758-5200

April 14-17
"International Single Fiber EMG Course and Symposium"
Place: Durham
Credit: 28 hours
Info: Donald B. Sanders, M.D., Duke University Medical Center, Box 3403, Durham, NC 27710, 919/684-6078

April 17-20
"Workshop on Beyond Advanced Clinical Teaching: Small Groups & Lectures"
Place: Rougemont
Credit: 20 hours
Info: Katharine Munning, Ph.D., Duke-Watts Family Medicine Program, 407 Crutchfield Street, Durham, NC 27704, 919/471-2571

April 20
"Diabetes Update 1983"
Place: Greensboro
Info: W. B. Wood, M.D., Director CME, 231 MacNider 202H, UNC School of Medicine, Chapel Hill, NC 27514, 919/962-2118

April 21
"C.T. Scanning of the Body"
Place: New Bern
Info: William B. Hunt, Jr., M.D., P.O. Box 2157, New Bern, NC 28560, 919/633-8620

April 22-23
"Pediatric Postgraduate Course"
Place: Winston-Salem
Fee: $80
Credit: 9 hours, AMA Category 1
Info: Emery C. Miller, M.D., Bowman Gray School of Medicine, Winston-Salem, NC 27103, 919/748-4450

April 23
"Biomedical Consequences of Nuclear Weapons and Nuclear War"
Place: Chapel Hill
Fee: $60
Info: W. B. Wood, M.D., Director CME, 231 MacNider 202H, UNC School of Medicine, Chapel Hill, NC 27514, 919/962-2118

April 23-24
"Perinatology and Ultrasound"
Place: Chapel Hill
Fee: $200
Info: W. B. Wood, M.D., Director CME, 231 MacNider 202H, UNC School of Medicine, Chapel Hill, NC 27514, 919/962-2118

Out of State

February 6-12
"Radiology Postgraduate Course"
Place: Cancun, Mexico
Fee: $475
Credit: 25 hours
Info: Carl Ravin, M.D., Division of Imaging, Duke University Medical Center, Box 3808, Durham, NC 27710

February 10-11
"Issues in Adolescent Psychiatry"
Place: Tarpon Springs, Florida
Credit: 16 hours
Info: Forrest Smith, Duke University Medical Center, Box 3253, Durham, NC 27710

February 11-13
"Biomedical Topics in Psychiatry: Sleep Disorders, Consultation/Liaison, Substance Abuse"
Place: Hot Springs, Virginia
Info: Varleria Bloom, M.N., Box 48 MCV Station, Richmond, VA 23298, 804/786-8703

An added complication... in the treatment of bacterial bronchitis*

Some ampicillin-resistant strains of Haemophilus influenzae—a recognized complication of bacterial bronchitis*—are sensitive to treatment with Ceclor.[1-6]

In clinical trials, patients with bacterial bronchitis due to susceptible strains of Streptococcus pneumoniae, H. influenzae, S. pyogenes (group A beta-hemolytic streptococci), or multiple organisms achieved a satisfactory clinical response with Ceclor.[7]

Ceclor®
cefaclor
Pulvules®, 250 and 500 mg

Brief Summary Consult the package literature for prescribing information

Indications and Usage Ceclor® (cefaclor, Lilly) is indicated in the treatment of the following infections when caused by susceptible strains of the designated microorganisms

Lower respiratory infections, including pneumonia caused by *Streptococcus pneumoniae* (*Diplococcus pneumoniae*), *Haemophilus influenzae*, and *S. pyogenes* (group A beta-hemolytic streptococci)

Appropriate culture and susceptibility studies should be performed to determine susceptibility of the causative organism to Ceclor

Contraindication Ceclor is contraindicated in patients with known allergy to the cephalosporin group of antibiotics

Warnings IN PENICILLIN-SENSITIVE PATIENTS, CEPHALOSPORIN ANTIBIOTICS SHOULD BE ADMINISTERED CAUTIOUSLY. THERE IS CLINICAL AND LABORATORY EVIDENCE OF PARTIAL CROSS-ALLERGENICITY OF THE PENICILLINS AND THE CEPHALOSPORINS AND THERE ARE INSTANCES IN WHICH PATIENTS HAVE HAD REACTIONS, INCLUDING ANAPHYLAXIS, TO BOTH DRUG CLASSES.

Antibiotics, including Ceclor, should be administered cautiously to any patient who has demonstrated some form of allergy, particularly to drugs.

Pseudomembranous colitis has been reported with virtually all broad-spectrum antibiotics (including macrolides, semisynthetic penicillins, and cephalosporins); therefore, it is important to consider its diagnosis in patients who develop diarrhea in association with the use of antibiotics. Such colitis may range in severity from mild to life-threatening.

Treatment with broad spectrum antibiotics alters the normal flora of the colon and may permit overgrowth of clostridia. Studies indicate that a toxin produced by *Clostridium difficile* is one primary cause of antibiotic-associated colitis.

Mild cases of pseudomembranous colitis usually respond to drug discontinuance alone. In moderate to severe cases, management should include sigmoidoscopy, appropriate bacteriologic studies, and fluid, electrolyte, and protein supplementation. When the colitis does not improve after the drug has been discontinued, or when it is severe, oral vancomycin is the drug of choice for antibiotic-associated pseudomembranous colitis produced by *C. difficile*. Other causes of colitis should be ruled out.

Precautions *General Precautions*—If an allergic reaction to Ceclor occurs, the drug should be discontinued, and, if necessary, the patient should be treated with appropriate agents (e.g., pressor amines, antihistamines, or corticosteroids).

Prolonged use of Ceclor may result in the overgrowth of nonsusceptible organisms. Careful observation of the patient is essential. If superinfection occurs during therapy, appropriate measures should be taken.

Positive direct Coombs' tests have been reported during treatment with the cephalosporin antibiotics. In hematologic studies or in transfusion cross-matching procedures when antiglobulin tests are performed on the minor side or in Coombs' testing of newborns whose mothers have received cephalosporin antibiotics before parturition, it should be recognized that a positive Coombs' test may be due to the drug.

Ceclor should be administered with caution in the presence of markedly impaired renal function. Under such conditions, careful clinical observation and laboratory studies should be made because safe dosage may be lower than that usually recommended.

As a result of administration of Ceclor, a false positive reaction for glucose in the urine may occur. This has been observed with Benedict's and Fehling's solutions and also with Clinitest® tablets but not with Tes-Tape® (Glucose Enzymatic Test Strip, USP, Lilly).

Broad-spectrum antibiotics should be prescribed with caution in individuals with a history of gastrointestinal disease, particularly colitis.

Usage in Pregnancy—Pregnancy Category B—Reproduction studies have been performed in mice and rats at doses up to 12 times the human dose and in ferrets given three times the maximum human dose and have revealed no evidence of impaired fertility or harm to the fetus due to Ceclor. There are, however, no adequate and well-controlled studies in pregnant women. Because animal reproduction studies are not always predictive of human response, this drug should be used during pregnancy only if clearly needed.

Nursing Mothers—Small amounts of Ceclor have been detected in mother's milk following administration of single 500-mg doses. Average levels were 0.18, 0.20, 0.21, and 0.16 mcg/ml at two, three, four, and five hours respectively. Trace amounts were detected at one hour. The effect on nursing infants is not known. Caution should be exercised when Ceclor® (cefaclor, Lilly) is administered to a nursing woman.

Usage in Children—Safety and effectiveness of this product for use in infants less than one month of age have not been established.

Adverse Reactions Adverse effects considered related to therapy with Ceclor are uncommon and are listed below.

Gastrointestinal symptoms occur in about 2-5 percent of patients and include diarrhea (1 in 70).

Symptoms of pseudomembranous colitis may appear either during or after antibiotic treatment. Nausea and vomiting have been reported rarely.

Hypersensitivity reactions have been reported in about 1-5 percent of patients and include morbilliform eruptions (1 in 100). Pruritus, urticaria, and positive Coombs' tests each occur in less than 1 in 200 patients. Cases of serum-sickness-like reactions (erythema multiforme or the above skin manifestations accompanied by arthritis/arthralgia and, frequently, fever) have been reported. These reactions are apparently due to hypersensitivity and have usually occurred during or following a second course of therapy with Ceclor. Such reactions have been reported more frequently in children than in adults. Signs and symptoms usually occur a few days after initiation of therapy and subside within a few days after cessation of therapy. No serious sequelae have been reported. Antihistamines and corticosteroids appear to enhance resolution of the syndrome.

Cases of anaphylaxis have been reported, half of which have occurred in patients with a history of penicillin allergy.

Other effects considered related to therapy included eosinophilia (1 in 50 patients) and genital pruritus or vaginitis (less than 1 in 100 patients).

Causal Relationship Uncertain—Transitory abnormalities in clinical laboratory test results have been reported. Although they were of uncertain etiology, they are listed below to serve as alerting information for the physician.

Hepatic—Slight elevations of SGOT, SGPT, or alkaline phosphatase values (1 in 40).

Hematopoietic—Transient fluctuations in leukocyte count, predominantly lymphocytosis occurring in infants and young children (1 in 40).

Renal—Slight elevations in BUN or serum creatinine (less than 1 in 500) or abnormal urinalysis (less than 1 in 200).

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* Many authorities attribute acute infectious exacerbation of chronic bronchitis to either *S. pneumoniae* or *H. influenzae*.

Note Ceclor is contraindicated in patients with known allergy to the cephalosporins and should be given cautiously to penicillin-allergic patients.

Penicillin is the usual drug of choice in the treatment and prevention of streptococcal infections, including the prophylaxis of rheumatic fever. See prescribing information.

References

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2. Antimicrob. Agents Chemother. *11*: 470, 1977
3. Antimicrob. Agents Chemother. *13*: 584, 1978
4. Antimicrob. Agents Chemother. *12*: 490, 1977
5. Current Chemotherapy (edited by W. Siegenthaler and R. Luthy), II:880, Washington, D.C., American Society for Microbiology, 1978
6. Antimicrob. Agents Chemother. *13*: 861, 1978
7. Data on file, Eli Lilly and Company
8. Principles and Practice of Infectious Diseases (edited by G. L. Mandell, R. G. Douglas, Jr., and J. E. Bennett), p. 487, New York, John Wiley & Sons, 1979

Additional information available to the profession on request from Eli Lilly and Company, Indianapolis, Indiana 46285

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February 17-21
"Pediatrics in Puerto Rico: The 10th Annual Pediatric Symposium of Children's Hospital National Medical Center"
Place: Puerto Rico
Info: Susan Weiss, Children's Hospital National Medical Center, 111 Michigan Avenue, NW, Washington, DC 20010, 202/745-3000

February 21-23
"Gold Coast Seminar: Surgery"
Place: West Palm Beach, Florida
Credit: 8 hours
Info: Cindi Easterling, Office of Continuing Medical Education, Duke University Medical Center, Box 3306, Durham, NC 27710, 919/684-6485

February 24
"School Health V: Children's Problems with Schools"
Place: Johnson City, Tenn.
Fee: $35
Credit: 6 hours, AMA Category 1
Info: Floyd Goffin, M.D., Quillen-Dishner College of Medicine, East Tennessee State University, Johnson City, TN 37614, 615/928-6426, ext. 201

February 24-25
"Second Annual Perspectives on New Diagnostic and Therapeutic Techniques in Clinical Cardiology"
Place: Lake Buena Vista, Florida
Info: American College of Cardiology, 9111 Old Georgetown Road, Bethesda, Md 20814

February 28-March 4
"Annual Meeting of The US-Canada International Academy of Pathology"
Place: Atlanta
Info: Dr. Nathan Kaufman, 1103 Chefee Avenue, Augusta, Ga. 30904

March 7-9
"Gold Coast Seminar: Pediatrics"
Place: West Palm Beach, Florida
Credit: 8 hours
Info: Cindi Easterling, Office of Continuing Medical Education, Duke University Medical Center, Box 3306, Durham, NC 27710, 919/684-6485

March 20-24
"32nd Annual Scientific Session of the American College of Cardiology"
Place: New Orleans, Louisiana
Info: American College of Cardiology, 9111 Old Georgetown Road, Bethesda, Md. 20814, 301/897-5400

April 11-13
"Gold Coast Seminar: Medicine"
Place: West Palm Beach, Florida
Credit: 8 hours
Info: Cindi Easterling, Office of Continuing Medical Education, Duke University Medical Center, Box 3306, Durham, NC 27710, 919/684-6485

April 18-29
(Application deadline February 2)
"Clinical Cytopathology for Pathologists"
Place: Baltimore
Credit: 125 hours
Info: John K. Frost, M.D., 110 Pathology Building, The Johns Hopkins Hospital, Baltimore, Md. 21205

May 2-4
"Gold Coast Seminar: OB/GYN"
Place: West Palm Beach, Florida
Credit: 20 hours
Info: Katharine Munning, Duke-Watts Family Medicine Program, 407 Crutchfield Street, Durham, NC 27704, 919/471-2571

The items listed in this column cover the three months immediately following publication. Requests for listing should be mailed to Patricia Hodgson, Managing Editor, *North Carolina Medical Journal*, P.O. Box 3910, Duke University Medical Center, Durham, NC 27710 two months before they are scheduled to appear in the *Journal*.

News Notes

East Carolina University School of Medicine

Gov. James B. Hunt called the new Brody Medical Sciences building at East Carolina University School of Medicine "an example of what can happen when people of vision believe in a mission and work toward making it a reality."

Hunt was guest speaker for the dedication of the school's $26 million home, which is linked to the new Pitt County Memorial Hospital.

More than 1500 people attended the ceremony, including approximately 40 members of the Brody family from Kinston and Greenville, donors of more than $1.5 million to the facility.

The new 451,000 square-foot building houses the basic and clinical sciences departments, teaching areas, auditorium, administrative offices and outpatient center. It is situated on 40 acres and adjacent to the hospital, which contains a teaching addition.

ECU Chancellor Emeritus Leo W. Jenkins received a standing ovation. During his term of office, the idea of a medical school for Eastern Carolina was fought through the legislature and newspapers and finally was approved after a long battle.

ECU Vice Chancellor and Medical School Dean William E. Laupus described the school as dedicated to the original goals of providing family practitioners and other primary care physicians for rural communities, developing a regional health care system and providing access to medical education for qualified minority and disadvantaged students.

A series of open house affairs was held in the week preceding the dedication. The medical school staff, employees of Pitt County Memorial Hospital and the public were invited to visit the Brody Medical Sciences Building and school classrooms or laboratories and to tour the facilities.

Refreshments were served in an informal buffet for guests who attended the dedication.

Dr. Jerry G. Gregory has joined the Department of Psychiatric Medicine as assistant professor at the School of Medicine.

Prior to his appointment, he was staff psychiatrist at Johnston County Mental Health Center in Smithfield. He previously held teaching positions at the University of South Carolina School of Medicine and the William S. Hall Psychiatric Institute in Columbia, S.C.

A native of Oklahoma, Gregory received his undergraduate degree from Oklahoma City University and his medical degree from the University of Oklahoma School of Medicine. He completed postgraduate training at the University of Oklahoma Health Sci-

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ences Center, where he served as chief psychiatric resident.

Residency training in emergency medicine will be offered at the School of Medicine next summer, according to Dr. E. Jackson Allison Jr., chairman of the Department of Emergency Medicine and chief of emergency medicine at Pitt County Memorial Hospital.

The postgraduate program for emergency physicians recently received approval from the accreditation council for graduate medical education. The first physicians will be accepted into the second year level on July 1, 1983.

Allison says residents will receive most of their training at Pitt County Memorial Hospital but also will receive some experience at community hospitals in the region, including Wayne County Memorial Hospital in Goldsboro and Beaufort County Hospital in Washington.

The residents also will rotate through emergency departments at other major medical centers in North Carolina, as well as Washington, D.C., Augusta, Ga., and Baltimore, Md.

The residency program in emergency medicine is the seventh postgraduate program to be offered by the medical school. Other programs are in family medicine, internal medicine, obstetrics and gynecology, pediatrics, psychiatric medicine and surgery.

People who work at desk jobs and complain about aching arms after a weekend of lawn-raking possibly are suffering from a protein breakdown in muscle tissues. Joggers and weight-lifters who are considered physically fit may suffer less, however, from the effects of protein destruction during exercise.

These are some of the conclusions being drawn by Dr. G. Lynis Dohm, associate professor of biochemistry at the School of Medicine. He has been involved in research studies related to exercise and muscles for the past 10 years.

Dohm recently received a $47,829 grant from the National Institute of Arthritis, Diabetes, Digestive and Kidney Diseases to support his fifth year of special studies on control of muscle protein metabolism during exercise.

Dohm says that extensive testing has shown that strenuous exercise influences muscle protein and is associated with muscle soreness. He believes these findings indicate that protein may also be an important source of glucose or carbohydrates in the body's recovery from extensive physical activity.

Dr. Charles E. Boklage, assistant professor of microbiology, organized and moderated a panel discussion on "Needs for Genetics Education in North Carolina" for the 35th annual meeting of the Human Betterment League of North Carolina on Nov. 9 in Raleigh. Boklage was re-elected vice president of the league for a two-year term.

Dr. Carl R. Morgan, professor and chairman, Department of Anatomy, was elected president of the Southern Society of Anatomists at an October meeting in Johnson City, Tenn. Morgan will be host for the 1983 Southern Society meeting.

Dr. Zubie W. Metcalf Jr., director of the Center for Student Opportunities, has been appointed technical reviewer for the Health Careers Opportunity Grant Program in the Bureau of Health Professions of the Department of Health and Human Services, Public Health Service, Washington, D.C.

Dr. Billy E. Jones, professor of medicine, presented a paper on "Chemical Photodermatitis" at the Sixth Southeastern Consortium for Continuing Education in Dermatology at Charlottesville, Va., in September.

Two members of the Department of Physiology presented papers at the October meeting of the American Physiological Society in San Diego, Calif. They were Dr. Richard Athey, assistant professor, on "Effective Intraluminal Pressure on Rebound Excitation of Guinea Pig Small Intestine," and Dr. David L. Beckman, professor, on "Pulmonary Surfactant Changes from Stellate Ganglion Stimulation."

Dr. Richard Ray, assistant professor of physiology, presented a paper, "A Study of Coding in Primary Afferents in the Raccoon: The Neural Representation of Mechanical Stimuli Varying in Location and Intensity," at the Society for Neuroscience annual meeting in Minneapolis, Minn., Oct. 31-Nov. 5.

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An article on the subject of "Sex Differences in Autism" was written by Dr. Dennis Revicki, instructor of family medicine, Eric Schopler, University of North Carolina at Chapel Hill, and Catherine Lord, Glenrose Hospital, Edmonton, for the December issue of the *Journal of Autism and Developmental Disorders*.

Dr. Peter B. Campbell, associate professor of medicine, collaborated in two presentations delivered in October and November. They were: "*In vitro* Production of the Cell-directed Inhibitor of Monocyte Leukotaxis (CDI-MLx)," with Timothy A. Tolson, B.S., for the American Society for Microbiology Oct. 3-9; and "Allograft Rejection Induces Defective Peripheral Monocyte Leukotaxis," with Dr. Francis T. Thomas, Tolson and Dr. Judith A. Thomas, to the American College of Surgeons in Chicago, Ill., Oct. 24-27. The paper was published in *Surgical Forum*. A third presentation, "Defective Peripheral Blood Monocyte Leukotaxis: An Early Indicator of Allograft Rejection," was a collaboration with Thomas, Tolson and Thomas, for the third International Immunological Symposium at Key Biscayne, Fla., Nov. 21-24.

A paper by Dr. Seymour Bakerman, chairman of the Department of Pathology and Laboratory Medicine, and Dr. P. G. Khazanie, assistant professor of pathology, "Laboratory Testing for Bacterial Meningitis," appeared in the October issue of *Laboratory Management*.

During the October meeting of the Southern Society of Anatomists, a paper on "Regionalization of Uterine Blood Flow during Pregnancy: Relationship to Intrauterine Growth of the Guinea Pig Fetal Placental Unit" was delivered by Dr. David R. Garris, assistant professor of anatomy, at Johnson City, Tenn. Garris also collaborated with Carol Smith, Dean Davis, A. R. Diani and G. Gertsen in an article for Diabetologia, September, 1982, entitled "Morphometric Evaluation of the Hypothalamic-ovarian Axis of the Ketonuric, Diabetic Chinese Hamster: Relationship to the Reproductive Cycle."

Dr. Brian A. McMillen, assistant professor of pharmacology, delivered a presentation on "Effects of Buspirone, an Anxiolytic Drug, on Rat Brain Dopamine Metabolism and Function," at the 12th annual meeting of the Society for Neuroscience, Min-

neapolis, Minn. Oct. 31-Nov. 5. He also co-authored four other presentations at the same meeting. An article by McMillen on "Straital Synaptosomal Tyrosine Hydroxylase Activity: A Model System for Study of Presynaptic Dopamine Receptors," appeared in a recent issue of *Biochemical Pharmacology*.

Dr. Richard H. Merrill, associate professor of medicine, co-authored an article on "Dialysis Catheter-Induced Pericardial Tamponade," with Dr. Spencer O. Raab, professor of medicine, in the September issue of *Archives of Internal Medicine*.

The board of directors of Research Corporation has announced an $8,000 Cottrell Research grant has been awarded to Dr. Phillip H. Pekala, assistant professor in the Department of Biochemistry. His project, "The Involvement of Poly (ADP-ribose) In Preadipocyte Differentiation," involves the regulation of gene expression during cellular development and differentiation.

Two grants for $3,000 each were awarded to Dr. Loretta Kopelman, director, and Dr. John Moskop, assistant professor, of the humanities program. Trustees of the Arthur Vining Davis Foundations funded a conference on "Moral Choice and Medical Crisis," and the Board of Directors of the American Medical Association Education and Research Foundation supported a symposium on the same subject.

Dr. Eugene Furth, chairman of the Department of Medicine, and Kopelman screened a film presentation on "Foot and Mouth Diseases: Vignettes in a Hospital Setting," at the Society for Health and Human Values and the Association of American Medical Colleges in Washington Nov. 6.

Dr. Todd Savitt, associate professor of the humanities program, was the author of "Medical History and Medical Humanities: A Commentary, in Teaching the History of Medicine at a Medical Center" published by Johns Hopkins University Press. Savitt presented "Educating Black Physicians, 1865-1920" at the Indiana Historical Society annual meeting Nov. 6 in Indianapolis, Ind.

During pregnancy, an internal communications system or "feedback pathway" exists between the reproductive tract and the hypothalamus, and dysfunctions or breaks in the "pathway" may cause some of the major complications of pregnancy, says Dr. David R. Garris, assistant professor of anatomy.

Garris is collaborating in research on these problems with Dr. R. B. Billiard of Case Western Reserve University in Cleveland, Ohio, under an $850,000 National Institutes of Health grant. This is part of a large project grant under the direction of Dr. Brian Little, chairman of the Department of Reproductive Biology at the university.

Their studies will concentrate on a search for specific neurons within the hypothalamic cell nuclei that are sensitive to and functionally dependent on ovarian steroid hormones.

Susie Bredderman, M.S., R.D. in the Department of Family Medicine, was a guest on Dr. Donald Reece's talk show, "Toward a Healthier You," on the nutritional aspects of diabetes mellitus, hypertension and coronary heart disease.

Dr. James L. Mathis, chairman of the Department of Psychiatric Medicine, presented a paper, "Mid-Life Years—When the Bills Come Due," at the October meeting of the Greenville Mental Health Association.

Dr. Lynn H. Orr Jr. of the Department of Cardiology gave a presentation on "Current Use of Beta Blockers in Cardiac Disease" as part of an AHEC-CME program at Wayne County Memorial Hospital in Goldsboro Nov. 15.

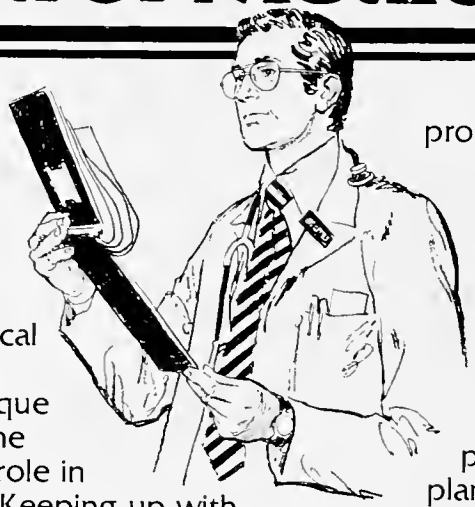
Dr. Jarlath MacKenna, associate professor of obstetrics and gynecology, gave a presentation entitled "The HELLP Syndrome in Pre-eclampsia" for a District IV meeting of the American College of Obstetrics and Gynecology at Walt Disney World, Fla., Nov. 15-17.

Dr. Walter J. Pories, chairman of the Department of Surgery, presented a paper entitled "Adventures in Obesity" at Charlotte Memorial Hospital on Nov. 11.

A paper entitled "Drug Overdose" was presented by Dr. Irvin L. Blose, professor in the Department of Psychiatric Medicine, to the medical staff of Seymour Johnson AFB on Oct. 7.

Presentations were made by Dr. James G. Jones of the Department of Family Medicine on "The Family Physician as a Specialist" at the Rocky Mount Sanitarium on Oct. 26, and to the joint session of the Virginia Medical Society and the Virginia Academy of Family Physicians in Williamsburg on Nov. 12, on the subject of "Family Medicine—Where to, from Here." Jones also was the author of two publications: "Annual Report of the Academy of Family Physicians Delegates Report," and "An Update on the North Carolina Academy of Family Physicians Memorial Scholarship Funds and Its Accomplishments in the Past Decade," which appeared in the *North Carolina Academy of Family Physicians*, November, 1982.

The Everchanging Field of Medicine...



A doctor's study of medicine doesn't end with medical school. Every medical advance or new technique redefines the physician's role in some way. Keeping up with these constant developments is part of being a doctor.

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A paper was given by Dr. Linda Z. Nieman, of the Department of Family Medicine entitled "Confusional States Chart Audit as a Guide to Resident Competency," at a conference on "Family Medicine and the Aging Patient: Clinical and Educational Issues," on October 18 at Asheville, N.C. Dr. Mallie B. Penry, also of Family Medicine, was elected to the Pitt County Council on Aging and accepted as a member of Gerontological Nurse Educators Network in North Carolina.

University of N.C. School of Medicine N.C. Memorial Hospital

North Carolina Memorial Hospital has been designated a "level-one" regional trauma center by the N.C. Office of Emergency Medical Services.

The designation formally recognizes the hospital as a major referral center for patients from throughout the state with critical injuries. N.C. Memorial is expected to be primarily responsible for treating trauma victims from Alamance, Caswell, Chatham, Durham, Franklin, Granville, Harnett, Johnston, Lee, Moore, Orange, Person, Vance, Wake and Warren counties.

Designating level-one trauma centers is the start of an effort by the Office of Emergency Medical Services to classify hospitals according to their ability to treat injuries and to establish criteria for the transfer of trauma victims, said Dr. Herbert Proctor, director of the N.C. Memorial Hospital Trauma Center.

Eric Munson, executive director of N.C. Memorial Hospital, said that even though the hospital is now classified as a regional trauma center, it will continue to provide complete health care services to local residents, regardless of the nature or extent of their illnesses or injuries.

"In addition to formalizing our regional outreach responsibilities," Munson said, "the trauma center designation reinforces our commitment to provide emergency care of the highest quality to people in our own community."

A "test-tube baby" clinic which will open early 1983 at N.C. Memorial is expected to attract couples from throughout the Southeast. The program will be headed by Dr. Luther Talbert, professor of obstetrics and gynecology and director of the division of reproductive endocrinology and fertility.

Both N.C. Memorial and Duke are expected to open *in vitro* fertilization clinics early in 1983 and they will be the first such clinics in the Carolinas. *In vitro* fertilization refers to the process by which women who are unable to have babies in the conventional fashion can be assisted by fertilization outside the body.

Talbert said women who are candidates for *in vitro* fertilization usually have some sort of damage to their fallopian tubes which prevents an egg in the ovary from reaching the uterus.

"Under this procedure," he explained, "we will be giving the patient a fertility drug which will increase the number of eggs she will produce. We will monitor the patient carefully as the eggs develop and, at the appropriate time, put the patient under general anesthesia and remove the egg using a small tube called a laparoscope."

Talbert said the eggs are transferred to a glass Petri dish, allowed to mature and then fertilized using the husband's sperm. "After two or three days, depending on the development of the egg or eggs, they are transferred back into the woman's uterus," he continued.

All successfully fertilized eggs are placed in the uterus, Talbert said, and a successful pregnancy results in 10% to 20% of the cases.

The *in vitro* fertilization team at the School of Medicine will be using one of the operating rooms in the hospital's new outpatient surgery facility. An egg laboratory now is under construction adjacent to the day op surgery suite.

In addition to Talbert, team members will include: Dr. Mary G. Hammond, assistant professor of obstetrics and gynecology; Dr. Jouke K. Halme, assistant professor of obstetrics and gynecology; Dr. Jaroslav F. Hulka, professor of obstetrics and gynecology; and Dr. Michael G. O'Rand, associate professor of anatomy and obstetrics and gynecology.

A Greensboro charitable foundation has endowed a scholarship fund to aid students in the School of Medicine who are committed to practicing medicine within the state.

Representatives of the Sigmund Sternberger Foundation recently presented $25,000 to the School of Medicine to complete a $50,000 gift. The foundation has made annual contributions to support Sigmund Sternberger scholarships since 1970. In 1982, the foundation's board of directors voted to perpetuate the scholarships by endowing them, according to Leah Louise B. Tannenbaum, chairman of the board and niece of the late Sigmund Sternberger.

Dr. A. Jack Tannenbaum, a member of the Sternberger Foundation board of directors and clinical professor of medicine at UNC-CH, noted that the foundation hopes the scholarships will serve two purposes.

"The scholarships, of course, are intended to provide aid to promising and deserving students," he said. "But we also hope they will serve as an example, and that recipients will want to offer similar aid to medical students of future generations."

The late Sigmund Sternberger was a prominent industrialist and a leader in civic, religious and cultural activities of Guilford County. He was devoted to assisting persons in his community who would not otherwise be able to reach their potential.

Dr. Floyd W. Denny Jr., Alumni Distinguished

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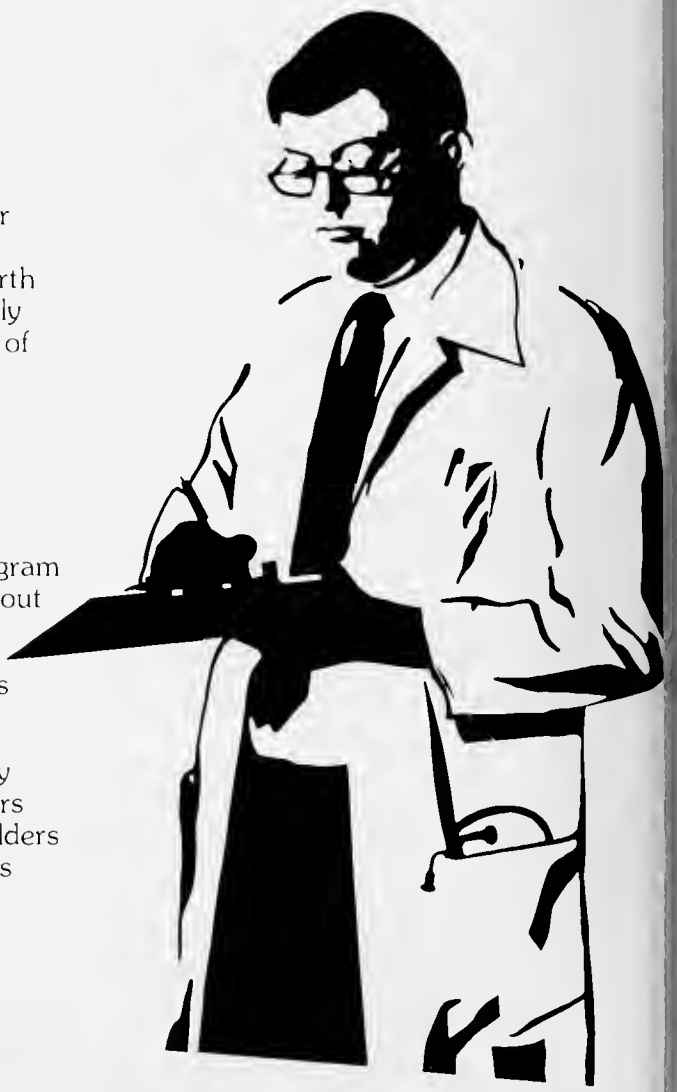

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Professor of Pediatrics, was among five prominent citizens to receive the highest honor presented by the state. The 19th annual N.C. Awards were presented by Gov. Jim Hunt at a banquet in Raleigh.

Denny, who served as chairman of the UNC-CH Department of Pediatrics from 1960 until 1981, was given the N.C. Award in Science for outstanding accomplishments in teaching, patient care and research, particularly in the areas of rheumatic fever and respiratory diseases.

As a scientist, Denny became known early in his career for his involvement in studies that led to an understanding of what causes rheumatic fever. His later research work has focused on infectious diseases.

A native of Hartsville, S.C., Denny graduated from Wofford College and earned his M.D. degree at Vanderbilt University. He taught at Vanderbilt, Western Reserve University and the University of Minnesota before coming to Chapel Hill 22 years ago.

Selection of N.C. Award recipients was made by a panel of distinguished North Carolinians headed by Terry Sanford, former governor and now president of Duke University. In addition to recognizing scientific achievement, N.C. Awards also were presented to leaders in public service, literature and the fine arts.

James N. Hayward, H. Houston Merritt Distinguished professor of neurology and medicine participated in a site visit at the Salk Institute in La Jolla, Calif. Sept. 20-22 for the National Institute of Arthritis, Diabetes, and Digestive and Kidney Diseases.

Hayward also presented a talk on Vasopressin Neurons in the Hypothalamus at the 33rd Fall Meeting of the American Physiological Society Oct. 14 in San Diego.

Joan Potter, senior resident in family medicine, was one of four physicians honored for original research papers presented at the AAFP Annual Scientific Assembly held Oct. 4-7 in San Francisco. Her paper was titled "Women in the Practice of Primary Care Medicine."

John J. Aluise, clinical assistant professor of family medicine, presented a Practice Management Workshop for Family Practice residents from the University of Nebraska and from Creighton University on Friday, Nov. 5 and Saturday, Nov. 6.

Two new clinical trials underway in the UNC School of Medicine are seeking patients. Drs. Ronald Schwarz and Eugene Bozymski are looking for patients with benign gastric ulcers. Drs. Henry Nathan and Douglas Drossman are looking for patients with irritable bowel syndrome. Call 919/966-2511 for more information.

The Bowman Gray School of Medicine Wake Forest University

North Carolina Baptist Hospital, the principal teaching hospital for the Bowman Gray School of Medicine, has been named a level one trauma center by the N.C. Department of Human Resources.

The designation recognizes that the hospital meets the level one requirements established by the American College of Surgeons.

The director of Baptist's emergency department, Dr. Frederick W. Glass, explains that trauma centers offer all of the major services needed for severe injuries 24 hours a day, seven days a week.

Trauma centers are designated in medical centers such as the Bowman Gray/Baptist Hospital Medical Center because they have trauma teams on hand at all times through their many house officer training programs.

In order to receive the level one trauma center designation, Baptist was surveyed by a team which looked at all aspects of the trauma team as well as the physical facilities needed to handle the severe problems handled by such a team. The survey team also placed considerable importance on the cooperation which is needed among all of the people who are part of a successful trauma center.

As many as 1,000 women are expected to aid the Bowman Gray School of Medicine in a research project aimed at finding whether ultrasound is useful in discovering breast disease.

Women referred to the Bowman Gray/Baptist Hospital Medical Center for X-ray examinations of the breast also are asked to undergo the ultrasound breast examination. That system provides physicians with a rapid means of comparing the results of both ultrasound and mammography.

Initial results of the research with ultrasound indicate that ultrasound can be particularly useful for studying the breasts of younger women. Those women have breast tissue which is more glandular and more dense.

Bowman Gray doctors look upon ultrasound and x-ray examinations as a very good combination for diagnosing breast diseases. The ultrasound will allow repeated breast examinations over many years without having to expose the patient to x-rays.

Dr. Richard Janeway, dean of the Bowman Gray School of Medicine, is the new chairman of the Council of Deans of the Association of American Medical Colleges (AAMC).

He was installed at the 93rd annual meeting of the association in Washington, D.C.

In his new office, Janeway will represent the deans on the AAMC's executive council, which is composed of 23 members. The Bowman Gray School of Medicine is the only school in the nation with three rep-

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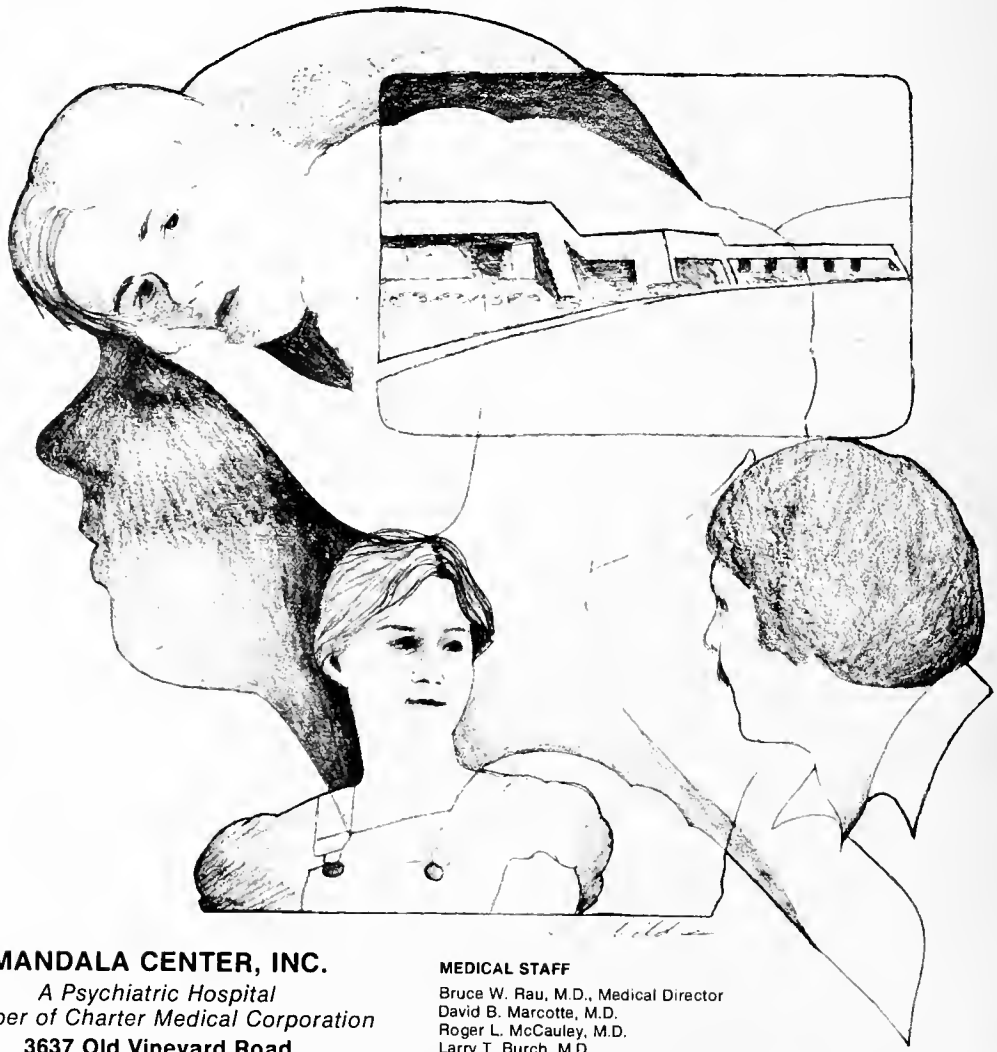

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resentatives on the executive council.

Dr. Joseph E. Johnson, professor and chairman of Bowman Gray's Department of Medicine, has been named to the executive council as a representative from the Council of Academic Societies. Dr. Manson Meads, director of the Bowman Gray/Baptist Hospital Medical Center, serves on the executive council as the Distinguished Service member.

Three others from Bowman Gray were elected to offices in the AAMC. Russell Armstead, director of strategic planning, was elected secretary for the Group on Institutional Planning; Dallas Mackey, director of development, was elected vice chairman for alumni/development of the Group on Public Affairs; and Robert Rose, controller, was elected southern regional chairman of the Group on Business Affairs.

A Bowman Gray endocrinologist has been awarded a $23,657 grant from the North Carolina Affiliate of the American Diabetes Association.

Dr. David B. MacLean, assistant professor of medicine, will use the grant to study the sensory vagus nerve, a large nerve which carries information to the brain from organs in the chest and abdomen.

According to MacLean, the motor vagus nerve plays an important role in regulating the secretion of insulin and other pancreatic hormones. But it is still not clear what role is played by the sensory part of the nerve.

In his research, MacLean will study two neuropeptides which are protein substances present in the sensory fibers of the vagus nerve. He will attempt to determine in an animal model how the neuropeptides affect pancreatic hormone secretion and appetite regulation.

Another aspect of the research will focus on the way the sensory vagus nerve may alter carbohydrate metabolism and body weight.

Dr. Dixie L.B. Soo of Lima, Ohio, has been installed as the 36th president of the Medical Alumni Association of the Bowman Gray School of Medicine.

She succeeds Dr. Gary B. Copeland of Fayetteville.

The installation came during the association's annual alumni dinner in Winston-Salem. During the meeting, Dr. Charles R. Duncan Jr. of Greenville, S.C. was elected president-elect of the association, and Miss Katherine Davis, assistant to the director of the medical center, was re-elected secretary.

Those elected to the association's 20-member alumni council include Dr. W. Frank Sohmer Jr. of Winston-Salem; Dr. William C. Hayes of Wilkesboro; Dr. Thomas D. Long of Roxboro; Dr. Manly Y. Brunt Jr. of Bryn Mawr, Pa.; and Dr. John J. Thompson of Essex Fells, N.J.

The three Bowman Gray alumni honored during the dinner as Distinguished Alumni Lecturers were Dr. Mary Jo Carter, professor of medicine at the Medical College of Georgia; Dr. W. Ray Cowan, director of the Armed Forces Institute of Pathology in Washington; and Dr. Nancy O. Whitley, professor of diagnostic radiology at the University of Maryland Hospital in Baltimore.

The association's Distinguished Service Award was presented to John F. Watlington Jr., chairman of the executive committee of Wachovia Bank and Trust Co. The Distinguished Alumnus Service Award went to Dr. E. Garland Herndon Jr., vice president for health affairs and director of the Woodruff Medical Center at Emory University.

Research on a hormone discovered at the medical center two years ago has produced new evidence of the hormone's role in causing one type of hypertension.

The hormone, endoxin, is made in the body and is structurally similar to digoxin, a man-made drug used to treat heart failure.

Bowman Gray researchers set out to test a theory that blood levels of endoxin increase with a high salt diet. Rats received considerable salt in their drinking water, and they were given a drug which delays normal removal of salt by the kidneys.

After eight days of retaining salt, the blood levels of endoxin in the rats nearly doubled. More importantly, the increase in endoxin levels was followed by an increase in blood pressure.

The combined high blood pressure and the endoxin

enabled the rats to rid themselves of the salt, resulting in endoxin returning to normal levels. But for reasons not yet understood, the blood pressure remained high after the endoxin levels dropped to normal.

The researchers concluded that endoxin appears to play a significant role in starting high blood pressure, but may have little or no role in maintaining high blood pressure once it has started.

Dr. William H. Dodge, associate professor (experimental medicine), has been elected president of the Southeastern Cancer Research Association for 1983.

Dr. David L. Kelly Jr., professor of neurosurgery, has been appointed to the executive committee of the American Academy of Neurological Surgery.

Dr. William B. Lorentz Jr., professor of pediatrics, has been elected president of the Piedmont Medical Foundation.

Dr. J.M. McWhorter, assistant professor of neurosurgery, has been appointed the 1983 chairman of the neurosurgical workshop sessions for the Congress of Neurological Surgeons.

Duke University Medical Center

A new procedure that disintegrates and removes kidney stones up to one inch in diameter without major surgery is now being performed at Duke University Medical Center.

A unique apparatus called a nephroscope makes it all possible. It is inserted through the skin into the kidney, where it breaks up the stones with high frequency sound waves and then sucks out the pieces, without open surgery and with little risk to the kidney.

An interdepartmental team of physicians performs the procedure under general or local anesthesia in just 30 minutes to two hours, depending on the size and number of stones.

"It cuts the hospitalization for this problem from seven to 10 days down to three or four days," said urologist Dr. Culley Carson, "and allows the patients to return to full physical work in a week or 10 days instead of six weeks.

The Combined Medical Specialties Unit, an innovation in the diagnosis and treatment of patients, opened at Duke in November. The new unit's approach to treatment offers a comprehensive medical and psychological evaluation and treatment program, plus the prospect of a shorter hospital stay.

Joint directors of the new unit are Drs. Michael McLeod and Trig Brown in the Department of Medicine and Dr. Alan Stoudemire in the Department of Psychiatry.

McLeod said the interdisciplinary approach not only applies to people with stress-related illnesses, but also to people who have illnesses such as rheumatoid arthritis, asthma or inflammation of the colon where depression or anxiety is a prominent component of the illness.

Additional illnesses that can be treated in the new unit include chronic tension and migraine headaches, depression or anxiety with physical complaints, senility and similar mental problems and complications from overuse of medications.

"One of the main advantages of the new unit is that the internist and psychiatrist will collaborate from the first day of admission in assessing the patient's problems," said Stoudemire. The simultaneous evaluation should save time and money, he added.

Duke University Medical Center and the General Electric Company have announced a joint effort to explore uses of nuclear magnetic resonance (NMR), a new non-invasive diagnostic system.

The system can detect small changes in the body's use of energy that could help determine whether a tumor is malignant. It might also be used to diagnose conditions that could lead to later heart attacks or strokes.

Radiologists have sought for decades a way of taking pictures of the body's interior without using ionizing radiation, such as x-rays. The NMR scanner will do that, producing images similar to those from computed tomography (CT) scanners.

The NMR system at Duke will be the most powerful in a university research facility, according to Duke radiologists. With the system, researchers will compare the information obtained with NMR to the information gained through other diagnostic methods.

The system will be installed in June 1983. At its heart is a powerful magnet, 10 feet tall and eight feet thick, that can produce a magnetic field 25,000 times as strong as that of the Earth.

The Food and Drug Administration may soon approve a capsule form of delta-9-tetrahydrocannabinal (THC), the narcotic agent in marijuana, for treatment of nausea and vomiting in cancer patients who are on chemotherapy.

Dr. John Laszlo, director of clinical programs in the Duke Comprehensive Cancer Center, made the prediction during a symposium on cancer chemotherapy held in November.

Laszlo was instrumental in having the drug approved for clinical use.

A quiet revolution is brewing in some clear plastic dishes at Duke University Medical Center.

In those dishes, Duke researchers hope they have the beginnings of new diagnostic tests and perhaps treatments for cancer of the pancreas, malignant melanoma, brain tumors, leukemias and prostate cancer.

The dishes contain monoclonal antibodies. These remarkable proteins seek out specific cells in the body, ignoring other cells until they find the ones they're looking for.

Monoclonals have been known to kill cancer cells on their own. The successful treatment of a 67-year-old lymphoma patient with the proteins was reported last spring by Stanford researchers. Monoclonals also can be used to ferry other materials to tumors, such as radioactive tags to aid in diagnosis or drugs to attack the cancer.

In the past three years, Duke researchers have created more than two dozen of the antibodies. They believe they're on to something promising; so does the federal government.

Last summer the National Cancer Institute awarded a $2.8 million grant to Dr. Hilliard Seigler, a professor of surgery, and 36 colleagues primarily for expansion of their work with monoclonals.

An excess of certain hormones may explain why men with Type A personalities have a higher risk of heart disease and heart attacks.

In an article in the October issue of *Science*, psychiatrist Dr. Redford Williams and his colleagues at Duke University Medical Center reported evidence of physiological differences between young Type A and Type B men.

While solving mental arithmetic problems, Type A men produced higher levels of three hormones — cortisol, adrenaline and nor-adrenalin — that help the body adapt to stress conditions. During reaction time tests, Type A men produced higher levels of testosterone, the male sex hormone that has been linked to aggressive behavior.

Type A people are characterized as impatient, always in a hurry, easily angered, ambitious and, often, workaholics who push themselves to get ahead. Type B people, on the other hand, are more easy-going and slower to anger. They may work hard because they enjoy working, rather than because of driving ambition.

"Both cortisol and testosterone could be very important new leads in the search for specific mechanisms underlying increased risk of coronary heart disease in Type A people," Williams said.

Research findings by four scientists at Duke Medical Center may help explain how scavenger cells in the body, called macrophages, help kill cancer cells.

In the November issue of *Science* magazine, the researchers report that a modified protein generated in the body binds to macrophage receptors and triggers them to kill tumor cells.

"This could be a signal to tell the body there are tumors, and they should be attacked," said Dr. Salvatore Pizzo. "We would like to know if we could augment the macrophage's ability to kill tumors."

A team of Duke pathologists, biochemists and microbiologists conducted the research. It included Drs. Pizzo, William J. Johnson, Michael Imber and Dolph Adams.

Connie and Donald Martin of Goose Creek S.C., had a special reason to be thankful at Thanksgiving.

Their one-year-old son Donald Jr. was cured of severe combined immunodeficiency disease, a rare and usually fatal illness. He is also one of only two children at Duke Medical Center, after many years of research, to be cured of the disease by bone marrow transplants from an opposite-sex sibling.

The disease is caused by a genetic defect in the body's immune system that prevents germ-fighting bone marrow cells and white blood cells from defending the body against everyday germs. As a result, its victims usually die from infections before their first birthdays.

The transplant that cured Donald Martin Jr. was performed by Drs. Rebecca H. Buckley, J. B. Sidbury Professor of Pediatrics and professor of immunology, and Phillip DeVoe, a fellow in pediatric allergy and immunology.

Duke University's Dietary Rehabilitation Clinic has moved into a remodeled YMCA on the corner of Duke and Trinity streets in Durham and plans to help overweight patients trim their waistlines by augmenting its dietary program with exercise.

"The gymnasium, swimming pool and athletic field here will allow us to prescribe closely supervised exercise for our patients," said the clinic's medical director, Dr. Sigrid Nelius.

People for whom obesity is a chronic problem usually come to the Dietary Rehabilitation Clinic after they've tried everything else.

"The clinic isn't a health spa. It's a part of Duke University Medical Center," Nelius said. "The patients are typically from out of town and are required to stay a minimum of four weeks. We feel it's important for them to be treated away from the pressures of home and office."

Salvatore Pizzo, associate professor of pathology and assistant professor of biochemistry, received a $64,950 research grant from the National Heart, Lung and Blood Institute for the study of "Cell Receptors in Coagulation and Atherogenesis."

William Shingleton, professor of surgery and director of the Duke Comprehensive Cancer Center, was awarded $45,954 from the National Cancer Institute for a planning grant on surgical oncology.

Theodore Slotkin, professor of pharmacology, received a $38,750 research scientist development

award from the National Institute on Drug Abuse to study drugs and the development of the nervous system.

Thomas Vanaman, professor of microbiology and director of the Basic Research Program at the Duke Comprehensive Cancer Center, received $306,699 from the National Cancer Institute for a research program project on the "Regulatory Function of Protein-Nucleic Acid Interaction."

Albert Davies, assistant professor of medicine, received a $48,064 clinical investigator award from the National Heart, Lung and Blood Institute to study the "Modulation of Adrenergic Receptor Sensitivity in Man."

Ralph Bollinger, assistant professor of surgery and immunology, received a $45,602 research grant from the National Institute of Allergy and Infectious Diseases. Bollinger is studying "Tolerance Induction with HC Antigen-Cell Conjugates."

David Pisetsky, assistant professor in the Department of Medicine, was awarded a $33,448 research grant from the National Institute of Arthritis, Diabetes, Digestive and Kidney Diseases for his study of "Idiotype Expression in Murine Autoimmune Disease."

Michael Conn, associate professor of pharmacology, was awarded $77,740 from the National Institute of Child Health and Human Development for his study on gonadotropin releasing hormone-action.

James Cox, assistant professor of surgery, received a $77,817 research grant from the National Heart, Lung and Blood Institute. Cox is studying the surgical treatment of cardiac arrhythmias.

Robert Jennings, professor and chairman of the Department of Pathology, received a $126,760 grant from the National Heart, Lung and Blood Institute for his research on myocardial ischemia.

Lazaro Mandel, associate professor of physiology, was awarded a $54,124 grant from the National Institute of General Medical Sciences for his study on "Mechanisms of Active and Passive Solute Transport."

Paul Modrich, associate professor of biochemistry, received a $145,107 grant from the National Institute of General Medical Sciences. Modrich is studying "Enzymatic Basis of Type II Restriction and Modification."

Dolph O. Adams, professor of pathology, received a $319,840 research program project from the National Cancer Institute for the study of development and regulation of macrophage activation.

Adams also received a $15,640 grant jointly funded by the National Institute of Allergy and Infectious Diseases and the National Cancer Institute for a workshop on macrophage activation.

Robert Bell, associate professor in the Department of Biochemistry, was awarded $84,989 from the National Institute of Arthritis, Diabetes, Digestive and Kidney Diseases for the study of "Regulation of Glycerolipid Synthetic Enzymes."

David Robertson, James B. Duke Professor and chairman of the Department of Anatomy, received a $109,647 research grant from the National Eye Institute for his study on "Ultrastructure of Normal and Cataract Lens Membranes."

Hugh Sampson, assistant professor of pediatrics and associate director of the CRU, was awarded $66,965 from the National Institute of Allergy and Infectious Diseases for "The Role of Food Hypersensitivity in Atopic Dermatitis."

Gary Stiles, associate in the Department of Medicine, received a $30,000 Clinician-Scientist Award from the American Heart Association.

Lyn Thet, assistant professor of medicine, was awarded $5,000 from the American Lung Association. Thet is studying "Radiation Injury to the Lung: Morphometry and Cell Kinetics."

Jose Torre-Bueno, medical research assistant professor in the Department of Physiology, received a $5,000 grant from the American Lung Association. Torre-Bueno is studying "High Frequency Ventilation Under Hyperbaric Pressure."

Mohamed Abou-Donia, associate professor of pharmacology, received a $97,045 grant from the National Institute for Occupational Safety and Health for research on "Occupational Neuropathies Due to Industrial Chemicals."

Michael Gruenthal, postdoctoral fellow in the Department of Pharmacology, received $17,040 from the National Institute of Neurological and Communicative Disorders and Stroke for his study on neurology.

William Hall, associate professor of anatomy, was

awarded $117,969 from the National Science Foundation. Hall is studying "Structural Organization of the Superior Colliculus."

William J. Johnson, assistant medical research professor of pathology, received a $30,000 fellowship from the Leukemia Society of America. Johnson is researching immunology.

Stephen Klemawesch, a fellow in the division of allergy and respiratory diseases, was awarded a $5,000 grant from the American Lung Association of North Carolina for his research on "Affinity Purification of Pollen Proteins."

David Madden, assistant research professor of psychiatry, received a $30,318 special research award from the National Institute on Aging for the study of "Age Effects in the Activation of Semantic Information."

Rodney McComb was awarded a $43,070 teacher investigator award from the National Institute of Neurological and Communicative Disorders and Stroke. McComb is studying the "Human Medulloblastoma Cell Surface Antigens."

Sheldon Pinnell, professor of dermatology, was awarded $69,060 from the National Institute of Arthritis, Diabetes, Digestive and Kidney Diseases for his research on dermatology.

George L. Maddox, professor of sociology and chairman of the university council on Aging and Human Development, received a $132,421 national research service award from the National Institute on Aging for a project, "Behavior and Physiology in Aging."

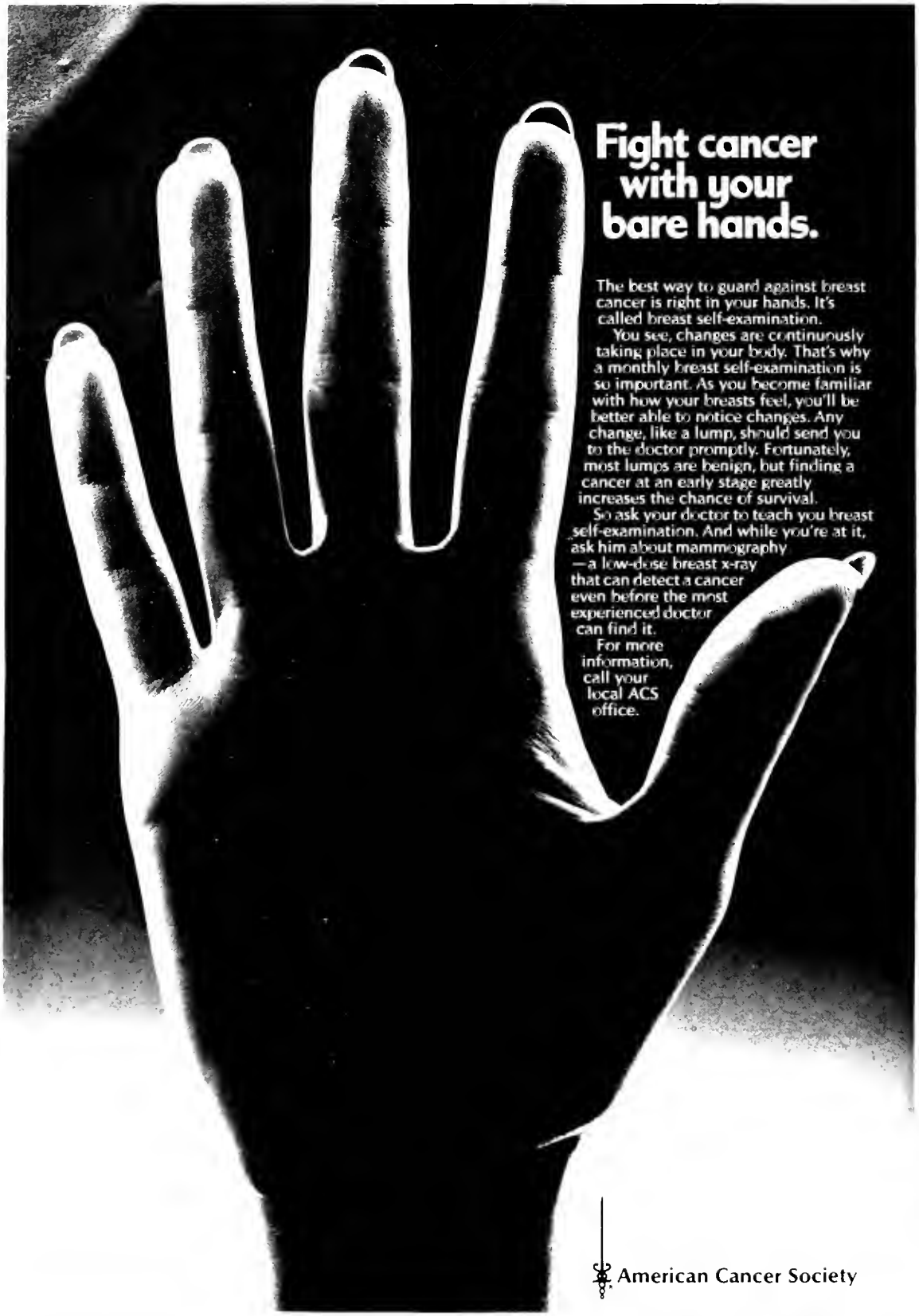
James Douglas, research fellow in the Department of Surgery, was awarded an $18,468 national research service award from the National Heart, Lung and Blood Institute for the study of arrythmias.

Everett H. Ellinwood, professor of psychiatry and pharmacology, received a national research service award of $48,560 from the National Institute of Mental Health for the study of biological sciences.

American College of Physicians

Specialists in internal medicine and related medical fields will take part in a two-day scientific meeting February 19-20 at the University of North Carolina, Chapel Hill. The North Carolina Regional Meeting of the American College of Physicians (ACP) offers the state's physicians up-to-date information on developments in the field of internal medicine. Joseph E. Johnson, III, M.D., of the Bowman Gray School of Medicine is the ACP Governor for North Carolina. Program chairman for the meeting is James A. Bryan, II, M.D., of the University of North Carolina School of Medicine.

Four North Carolinians have been chosen Fellows of the ACP. They are Drs. Philip L. Cohen and Walter R. Gammon of Chapel Hill, Dr. Richard E. Moon of Durham, and Dr. Denis I. Becker of Raleigh.



Space contributed as a public service

In Memoriam

JACK CRAVER EVANS, M.D.

Jack Craver Evans, M.D., died September 5, 1982.

Dr. Evans was a dedicated student and outstanding resident while at the Duke University Medical Center and University of Florida Medical Center preparing himself for the practice of pediatrics. He returned to his native Lexington in August 1966 and served his medical community in numerous roles, including chief of the Department of Pediatrics and chief of the medical staff at Lexington Memorial Hospital. He served his county and state medical societies in various capacities, including delegate and 9th District Councillor. He had also been president of the Lexington Area Chamber of Commerce, a director of the Youth & Family Counseling Service, and an active member of the Kiwanis Club. He further demonstrated his dedication to providing good medical care through his tireless efforts towards building and staffing a new Lexington Memorial Hospital.

Jack Evans, in his daily life, demanded the best of himself and by his example instilled this attribute in his associates. He was a man of varied responsibilities and interests, and his lifetime of contributions will long survive him.

He is survived by his wife Betsy, daughters Linda and Deborah, and sons Mark and Wayne.

DAVIDSON COUNTY MEDICAL SOCIETY

LEON HENRY FELDMAN, M.D.

On May 1, 1982, Leon Henry Feldman died after 45 years of practice of Internal Medicine in Asheville. He will be sorely missed by his many patients, friends and family.

Born in Baltimore, Maryland, June 10, 1910, he attended the University of Maryland, School of Pharmacy, receiving degrees of Ph.C. and B.Sc. in 1930. After this preparation, he entered the University of Maryland School of Medicine and earned his M.D. Degree in 1934. He completed internship and resident training in Internal Medicine at the Baltimore City Hospitals in 1937.

From the beginning of his practice in 1937, he was known as an early riser, among the first to make morning hospital rounds. His pharmaceutical training was evident in his skillful use of medicines. Easily available to his patients, he still found time for many varied activities.

As chief medical officer for the World Boxing Association, he wrote many of the safety codes that govern boxing throughout the world. A former vice president of the National Wrestling Association, he also headed the Asheville Boxing and Wrestling Commission and was a member of the State Commission from 1952-1958. An advocate of athletics for sport and health, he established a sports training scholarship at the University of North Carolina in Asheville. He also served as president of the Asheville Lion's Club, and vice president of the Salvation Army advisory board.

Dr. Feldman was devoted to his religious activities through his synagogue, the congregation Beth-Ha-Tephila, and especially in B'nai B'rith, the Jewish service organization which honored him with a testimonial dinner in 1969. For many years he was a member of the group's Board of Governors, as well as international vice president and national commissioner of its Anti-Defamation League.

He actively supported medical interests beyond his care of patients, belonging to county, state, regional and national medical associations, and the American Heart Association and he was president of the North Carolina Chapter of the American College of Chest Physicians. He served on the staffs of Asheville hospitals, primarily at St. Joseph's where he was chief-of-staff in 1953.

Dr. Feldman is survived by his wife, Ruth Johnston Feldman; a son, Leon H. Feldman, Jr. of Denver, Colorado; two daughters, Rhonda Gates of Portland, Oregon; and Barbara Backer of Charleston, S.C.; his brother, two sisters, and four grandchildren.

Until his retirement in 1981 following open heart surgery, he had scarcely slowed his pace and justly deserved his motto: "Service is the rent we pay for our room here on earth."

BUNCOMBE COUNTY MEDICAL SOCIETY

JAMES ALFRED MARTIN, M.D.

Dr. James Alfred Martin died on May 19, 1982.

Dr. Martin was born in Yadkinville, N.C., on September 7, 1890, attended Wake Forest College, and graduated from the Medical College of Virginia in 1915. He interned at the Stewart Circle Hospital in Richmond and obtained pediatric training in New York City.

He began the practice of pediatrics in Lumberton, on January 1, 1916, and practiced there for more than 50 years.

In May 1965 he received a plaque from the Medical Staff of Southeastern General Hospital marking his 50 years of medical service to the citizens of Robeson County.

He was a member and former president of the Robeson County Medical Society, a member of the American Medical Association and a member of the 50-Year Club of the North Carolina Medical Society. He was medical director of the N.C. Cancer Institute for 8½ years.

He was a charter member of the Lumberton Kiwanis and Lumberton Rotary Clubs and served as the president of the latter. He was vitally interested in Boy Scout work and founded the first Boy Scout Troop in Lumberton. He served as a deacon in the First Baptist Church for 22 years.

He was married on April 24, 1916, to Mary Jones of Richmond, and they celebrated their 66th wedding anniversary this year.

Other survivors are two sons, James Alfred Martin, Jr., Ph.D., of Union Theological Seminary and Columbia University, and Raymond Jones Martin, Ph.D., a professor at Agnes Scott College in Decatur, Georgia, three grandchildren and one great-grandson.

Dr. Martin was deeply loved by his fellow physicians, patients and friends. He was a kind and gentle man who loved the citizens of Robeson County and had a long distinguished career in the practice of pediatrics.

ROBESON COUNTY MEDICAL SOCIETY

Classified Ads

PRACTICE WANTED: Want to buy established Family or General Practice in North Carolina. Reply code 1183, North Carolina Medical Journal, Box 3910, Duke University Medical Center, Durham, NC 27710.

RADIOLOGIST: Half-time or part-time to join two man practice in a very nice small North Carolina town. Perfect for retired or semi-retired. Reply with CV to code 1283, North Carolina Medical Journal, Box 3910, Duke University Medical Center, Durham, NC 27710.

EMERGENCY CENTERS in Charlotte, North Carolina, seeking U.S. trained physicians for immediate openings. F.P./E.M. with BCLS, ACLS preferred. Competitive compensation, flexible scheduling. Send complete CV to Minor Emergency Centers, P.O. Box 221024, Charlotte, NC 28222, or call 704/527-4497.

BIODYNAMICS UNIMETER 300 blood analyzer, used very little. $500 (replacement would cost over $1200). 919/338-4141.

HILTON HEAD: Plan for Heritage Golf and Family Circle Tennis in April. Stay in beautiful new 3BR, 3½BA home on golf course. Private pool and tennis. Minutes to ocean. $700/week. 804/874-4428.

PATHOLOGIST — Board certified AP/CP, sixteen years experience in general pathology including lab director, seeks associate or solo position in NC. Available Jan. 1983. Code 1383, P.O. Box 3910, Duke University Medical Center, Durham, NC 27710.

SUMMER CME CRUISE/CONFERENCES ON LEGAL-MEDICAL ISSUES — Alaskan, Caribbean, Mediterranean. 10 & 14 days in July and August. Approved for 24 CME Cat. 1 credits (AMA/PRA). Distinguished professors. FLY ROUNDTRIP FREE ON CARIBBEAN AND ALASKAN CRUISES. Excellent group fares on finest ships. Registration limited. Scheduled prior to 12/31/80 — Tax deductible under 1976 Tax Reform Act. Information: International Conferences, 189 Lodge Ave., Huntington Station, N.Y. 11746. (516) 549-0869.

INTERNAL MEDICINE PRACTICE for sale in Raleigh. Specialist in cardiology retiring. Direct inquiries to Code 1583, North Carolina Medical Journal, P.O. Box 3910, Duke University Medical Center, Durham, NC 27710.

RETIRED GENERAL/THORACIC SURGEON'S INSTRUMENTS (417). Appraised $8532. Itemized list. 7 McDowell Street, Asheville, NC 28801. 704/255-7776. R. C. Loomis, M.D.

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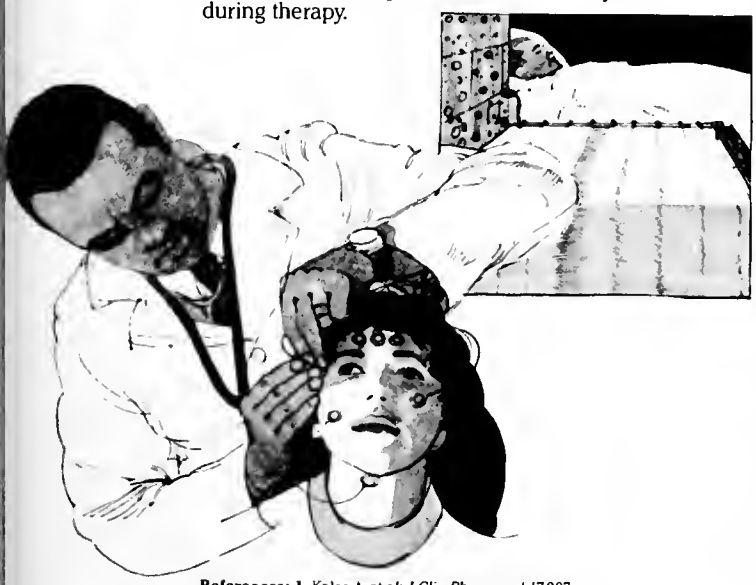

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Cervical Pregnancy Treated With Methotrexate

William S. Farabow, M.D., James W. Fulton, M.D., Van Fletcher Jr., M.D., Clarence A. Velat, M.D., and J. Thomas White, M.D.

ABSTRACT **A case of cervical pregnancy which invaded into the inferior area of the uterosacral ligament is presented. The difficulties in distinguishing between invasive mole and cervical pregnancy are discussed. The use of methotrexate with apparent beneficial outcome suggests that methotrexate be considered for the treatment of cervical pregnancy whenever uterine preservation is desirable, or as an adjunct to hysterectomy.**

Many authors have written about ectopic pregnancy developing within the confines of the cervix uteri.[1-5] Most have emphasized certain criteria for substantiation of the diagnosis, similar to that for ovarian pregnancy. These criteria are: 1) There must be cervical glands opposite the placental attachment, 2) The attachment of the placenta to the cervix must be intimate, 3) The whole or a portion of the placenta must be situated below the entrance of the uterine vessels, or below the peritoneal reflection of the anterior and posterior surfaces of the uterus, and 4) Fetal elements must not be present in the corpus uteri.[5] Most cases have been diagnosed intra-operatively during attempts to complete a suspected incomplete abortion, and have been associated with profuse bleeding requiring transfusion and or hysterectomy.[4,5] The use of methotrexate in the treatment of invasive gestational trophoblastic disease is well documented,[6-8] but its use in the treatment of cervical pregnancy is apparently unique.

CASE REPORT

S.C., a 22-year-old white female, gravida 2, para 1, last menstrual period October 5, 1980, who had had a positive pregnancy test two weeks previously, was seen at approximately thirteen and one half weeks gestation on January 9, 1981, with a history of influenza symptoms for a week and light painless vaginal bleeding for one day. On examination the cervix was closed, no blood was present, and the uterus was soft.

A repeat examination was planned in a week, but additional bleeding caused the patient to return in three days when loose tissue was noted in the cervical os. The pelvic examination indicated a normal sized uterus and adnexae. The free tissue was reported as "necrotic and degenerating decidual tissue" on pathological examination. No chorionic villi or endometrial glands were seen.

When she returned on January 16, 1981, one week after her initial visit, pelvic examination revealed tenderness, but no mass was described. Incomplete abortion and possible ectopic pregnancy were considered. Real-time ultrasonography did not define ectopic pregnancy but possible midline fetal movement was noted. She was warned about an ectopic pregnancy and was instructed to return in two weeks.

On January 29, 1981, she returned and reported no additional bleeding. The uterus was described as about 10 weeks gestational size, soft, somewhat irregular, and globular to the right. She returned on February 18, 1981, having experienced no additional bleeding, and was admitted to the hospital where pelvic examination indicated a soft 6 centimeter pulsating mass, adjacent to the uterus on the left. The mass was tender and fixed in the cul-de-sac, and was considered an unruptured ectopic pregnancy.

Exploratory laparotomy was performed that afternoon and a soft hypervascular mass next to the cervix, but apparently separate from it, was found to extend into the inferior aspect of the broad ligament displacing the uterosacral ligament posteriorly. The uterine fundus, tubes and ovaries were grossly normal. Because of the patient's age and desire for additional children, and because of the proximity of this large vascular mass to the left ureter, definitive surgery was not undertaken. Instead the abdominal incision was closed and a careful intrauterine exploration with a small curet performed. The uterine fundus contained little tissue, but an irregular area in the lower uterine segment and endocervical canal on the left yielded a single fragment of necrotic tissue. Vigorous bleeding

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Reprint requests to Dr. Farabow

began but was controlled by bimanual tamponade of the uterus. Estimated blood loss at the time of surgery was 400 ml. The tissue removed was reported as "sheets of degenerated necrotic decidua and slightly hydropically degenerated immature trophoblasts" (Figure 1). The slides were reviewed with the pathologist who felt that there was vascular capping and relative increased vascularity consistent with hydatidiform mole. Invasive trophoblastic disease as opposed to cervical pregnancy became the working differential diagnosis. The patient did quite well post-operatively and experienced no unusual vaginal bleeding.

Discussion raised the question of using methotrexate, in that this agent might have a desirable cytotoxic effect on the trophoblastic tissue regardless of whether it was malignant or benign. Consultation with Dr. John C. Weed, co-director of the Southeastern Regional Trophoblastic Disease Center at Duke University Medical Center was obtained and he agreed with this plan. Blood was sent to Duke for human chorionic gonadotropin titers (HCG), and was later reported as 21.6 Miu/ml. Intravenous pyelogram and chest x-ray were normal as were serum liver enzymes, blood and platelet counts.

The patient was given 15 milligrams methotrexate parenterally daily for five days, and with the exception of stomatitis requiring intravenous fluids, and transient serum liver enzyme elevations, therapy was tolerated well. On February 26, 1981, an ultrasound examination again raised the question of molar pregnancy. The patient was transferred to Duke Medical Center on March 2, 1981, for further diagnosis and treatment.

Initial studies there, including liver-spleen scan, brain scan, and chest x-ray, were normal. Pelvic ultrasound studies were consistent with trophoblastic disease or uterine fibroids. Serum beta HCG tests on March 2, 9, and 16 were less than 5 Miu/ml, and were not repeated. The patient was thought to be suffering from nonmetastatic malignant gestational trophoblastic disease. After her stomatitis had cleared sufficiently she was given alternating methotrexate and folinic acid using one mg/kg/day methotrexate alternating with 0.1 mg/kg/day folinic acid, which she tolerated well, experiencing only mild serositis.

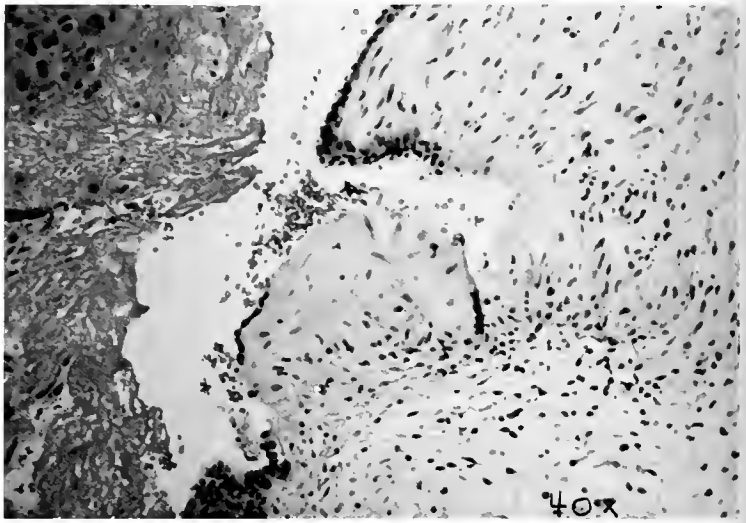

Figure 1. Photomicrograph with H and E stain showing immature trophoblastic tissue with some degeneration in tissue removed from the cervix with a small curette.

On March 11, 1981, pelvic examination confirmed the persistent mass, and pelvic arteriogram and computerized tomographic (CT) scan were performed. Following these procedures the consensus was that "although a definitive diagnosis of the mass was lacking, it was probably a benign lesion," because the arteriogram showed peripheral rather than central hypervascularity."

She was discharged on March 20, 1981, and was given an oral contraceptive. She was seen at Duke on April 8, 1981, where pelvic examination showed the mass to be 4-5 centimeters in diameter or slightly smaller than it had been three weeks earlier. Her last menstrual period had occurred April 1, 1981.

On May 7, 1981, the mass again was estimated at 5 centimeters and the patient remained asymptomatic.

On June 1, 1981, when she returned and reported cramping lower abdominal pain, the mass was felt to have enlarged slightly. Because of the persistence of the mass after chemotherapy (without regression), she was readmitted to High Point Memorial Hospital on June 15, 1981, for another exploratory laparotomy with catheterization of the left ureter. We planned to excise the mass, and conserve the uterus if possible. However, at the time of surgery on June 16, 1981, the mass was found to be contiguous with lower uterine segment and could not be dissected free. The mass was much less vascular than at the time of original laparotomy, and a relatively easy abdominal hysterectomy was carried out without excessive blood loss. The mass consisted of degenerating placental tissue with hemosiderin deposits and the entire left portion of the upper endocervical canal was destroyed (Figure 2). Histologic examination confirmed the degenerated cervical pregnancy (Figure 3).

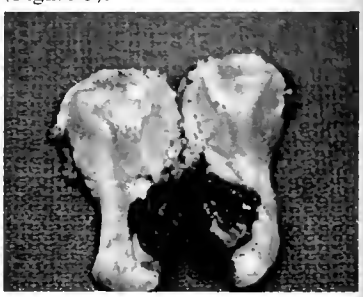

Figure 2. Picture of surgical specimen showing destruction of the cervix by a necrotic hemorrhage mass.

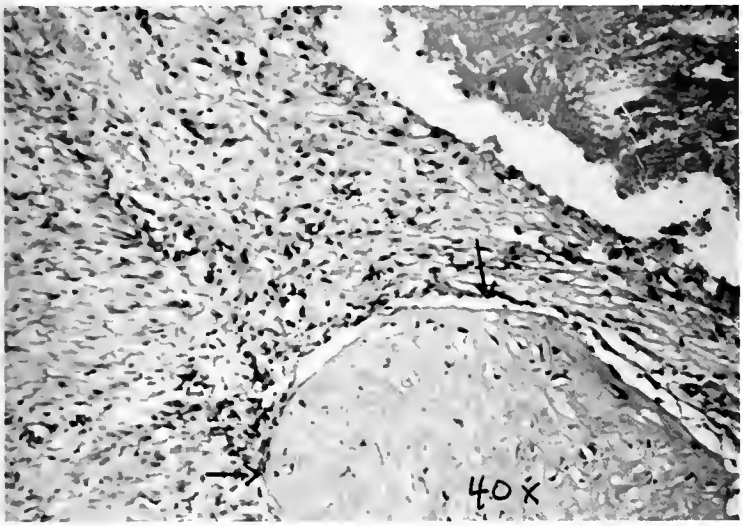

Figure 3. Photomicrograph of degenerated cervical pregnancy with H and E stain. Arrows indicate a trophoblastic "ghost" with no evident viable trophoblastic cells.

The patient had a benign post-operative recovery and went home on the fourth post-operative day. Subsequent office evaluations and beta HCG have been normal.

DISCUSSION

Trophoblastic tissue can multiply rapidly, spread and invade host tissue in a manner similar to an active malignancy. Histologic differentiation of normal and malignant trophoblastic tissue may be difficult.[10] This case demonstrates the difficulties encountered in accurately diagnosing and managing a pelvic mass of trophoblastic tissue. Because both normal pregnant tissue and malignant trophoblastic tissue will be affected by chemotherapeutic agents, methotrexate was given with apparently beneficial results. Although the mass did not totally regress after this therapy, subsequent hysterectomy was uncomplicated by the hemorrhage often reported.[3,11]

Cervical pregnancy is usually associated with implantation and development within the cervical canal but it has infrequently been noted to penetrate through the wall of the cervix and present as a paracervical mass.[11,12] If the diagnosis of cervical pregnancy can be substantiated, chemotherapy with such drugs as methotrexate should be considered as an alternative or adjunct to extirpative surgery. The marked degeneration and decreased vascularization of the mass produced by methotrexate made its dissection much easier and would have made simple removal feasible had not the cervix been irreparably damaged.

Several authors have urged conservative management of cervical pregnancy,[5,13] while others have noted the predisposition of patients who have had intrauterine devices (IUDs) or therapeutic abortions to develop cervical ectopic pregnancy.[11,14] Since the use of IUDs and therapeutic abortion are quite common, the estimated incidence of cervical pregnancy of 1 in 1,000 to 17,000 pregnancies may be expected to increase. We hope that conservative measures will be further developed to prevent the experience reported by Ranade et al in 1978,[15] of a 23-year-old gravida 2, para 0, with a history of previous therapeutic abortion who required blood replacement and emergency hysterectomy.

Pelvic arteriography,[9] ultrasound[16] and CT scanning are techniques which may aid in making the diagnosis of cervical pregnancy, or in helping the surgeon employ the least traumatic method of obtaining diagnostic tissue.

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SPECIAL ARTICLE

A Pecuniary Type of Sado-Masochism With Origins in Scotland

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IT would be somewhat heretical to begin any psychodynamically oriented psychiatric treatise without first paying due homage to the father of modern psychiatry. Hardly a psychoanalytic paper begins without first mentioning his name and manifold contributions. Consequently, I would be very remiss indeed if I too did not bow to Mecca and mention his name. This is, of course, none other than Sigmund Freud!

And now that I have done my duty, I would like to pursue my subject. After several years of intensive experience in the practice and teaching of psychiatry, I have become positively fascinated with a strange but very common syndrome of sado-masochism. This malady affects an estimated 3,265,000 Americans annually. It seems to become most prominent around the age of 15, but in most cases continues to plague its ill-fated subjects so relentlessly that death alone seems to be the only escape. In past generations it appeared to occur primarily in the male, but since the advent of modern psychiatry, it is diagnosed in ever increasing frequency in the female.

I have exhaustively studied Freud's writings for some description of this symptom complex, but all search has been fruitless. It fills me with considerable trepidation, as you can well imagine, not to have recourse to some of the wisdom of the father of psychiatry for direction. To make the problem even more awesome, these patients can never be studied exhaustively by free association, regression, transference phenomena, and other psychoanalytically accepted research techniques. Actually it is extremely rare to see one of these emotional cripples in the office at all. They do seem to have the "herd complex," however, and therefore when they are seen it is usually in large groups. As a matter of fact, they seem to have a weird tendency to gather especially on Thursday and Saturday afternoons. I don't know if Sigmund Freud ever observed this phenomenon, and if he had I do not know what he would have called it. Among those individuals who are completely ignorant of psychodynamic psychology it is frequently referred to rather naively as *golf*. I think it is all too obvious that we could not accept so simple a designation for it, so I have duly complicated it by giving it a proper scientific terminology. I choose to call it "Golf Addiction — A Pecuniary Type of Sado-Masochism with Origins in Scotland."

There are, in my opinion, several different syndromes to be observed among the golf addicts. These syndromes appear to relate very closely to the various stages of psychosexual development as described in the literature. I propose to trace these syndromes along the fairways of psychosexual development with you; but before I begin, a short history of the origins of this disease may serve as a good, Bermuda-tufted mound from which to tee off.

HISTORY

Golf is an outdoor game (sic — they call it a game, but it's really self-torture) which emphasizes skill rather than strength. It is played by both men and women. The player always tries to make a lower score than his opponent but he must not try to interfere with his opponent's play. (Of course, most modern players don't seem to know this, since they interfere in every way possible; from the subtle choked-up cough at the top of the backswing to the overtly hostile attempts to kick their opponents' balls — out of bounds, that is.)

Golf as we know it was originally played in Scotland with a leather-covered ball stuffed with feathers. (The phallic symbolism seems obvious.) Much earlier, the Romans in their day of empire played a golf-like game called "paganica" (and they named it well since we are all acquainted with some of the sado-masochistic Bacchic orgies these early Roman pagans indulged in). The Romans occupied parts of England and Scotland from about 100 B.C. to A.D. 400. We now believe that the Roman game of paganica was the forerunner of golf (which just goes to prove that every adult sado-masochistic syndrome probably originates in an infantile sado-masochistic ritual).

The earliest written evidence of the existence of golf dates back to 1457. In that year, the parliament of King James III of Scotland prohibited the playing of "golfe" because

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it had become so popular that it threatened the practice of archery for national defense. (The castration threat as experienced by King James seems fairly clear. Even more interesting, however, is the self-destructive aspect of the disease: the young Scots were apparently willing to let the whole damn country go to pot just so they could indulge their sado-masochistic impulses.) This law apparently remained in effect until the invention of gunpowder near the end of the 1400s made archery less important and restored golf to the people. (Many of the Scottish subjects would have shown better judgment had they destroyed themselves more quickly and effectively with gunpowder than with the more chronic self-destruction associated with golf.) The game was played with the feather ball until a ball of solid gutta percha was introduced about 1850. The present rubber ball was invented in the United States in 1899. (It is not stated who invented the rubber ball, but I presume it was the U.S. Rubber Company.)

The first permanent golf club in the United States, the Foxburg Country Club in Foxburg, Pennsylvania, was established in 1887. The St. Andrews Golf Club in Yonkers, New York, was formed in 1888, with a six-hole course laid out in a pasture. (Really. How symbolic can we get?) The St. Andrews club was instrumental in organizing the United States Golf Association in the *winter* of 1894 (certainly anyone who plays golf in the winter in New York is a determined and singularly dedicated masochist).

The first 18-hole course in the United States was opened for play in 1893 at Wheaton, Illinois. It was designed for the Chicago Golf Club. (Perhaps it is just coincidence, but it does seem rather appropriate that the first 18-hole playground for the unique bragadoccio of the golf addict should have been established for residents of the "Windy City." I understand this from personal experience since I never fail to take advantage of the opportunity to tell a new golfing partner about how I used to play par golf before I got out with him and shot 17 double bogies and a pick-up.) The first public course, at Van Cortland Park in New York City, was in operation in 1896. The first Professional Golfer's Association championship was held in 1916. So much for this history of golf, but lest you gentlemen doubt my sources of historical information, I would refer you to any children's edition of the World Book Encyclopedia under the letter "G."

SYNDROMES

I should like now to describe the various syndromes seen in golf addicts. It is my personal belief that the observation of a golfer at work — or play — (or whatever it is) will one day be a valuable addition to the armamentarium of psychiatry, as a psychodiagnostic tool. Even superficial observation allows us to determine quickly, but accurately, whether the subject's primary infantile trauma occurred at the oral, anal, phallic, or genital stage of development. It certainly promises to replace the tetanus anti-toxin test (er — I mean the TAT) as a rapid diagnostic agent. Perhaps many of you will differ with me in my interpretation of these syndromes in relation to the psychosexual stages of development. To this end constructive character assassination of the writer is imperative. In my own defense, however, I would like to remind you at this time that the only reference I had available to me in this study was the Children's World Book Encyclopedia — under the letter "G."

Weather Paranoia

The first syndrome of the sado-masochism of the golf addict that I would like to describe is that of Weather Paranoia. Freud was not sufficiently impressed with the entire question of fetal engrams to have been able to describe these patients even if he had had occasion to study them. The nuclear conflict in these individuals is that it was raining like hell on the day they were conceived, and raining like hell again on the day they were born. (The sado-masochistic theme is here well demonstrated, since it was certainly a sadistic parental act to conceive these people in such foul weather, and it was equally as masochistic on the part of the future addict to emerge from the blissful environs of the uterus under such adverse climatic conditions.) Further intensive inquiry about the mothers' emotional responses to their pregnancies in these cases will almost inevitably reveal that they felt as though a dark cloud were hanging over them throughout their entire pregnancy. They will often describe dreams in which they are caught up in dreadful rain storms, signifying the fear of impending emotional collapse that the pregnancy represents. Leaving the mothers for the moment, however, let us consider the effect of these fetal engrams in regard to the future golf addict. On the two singular most important days of his life — the day of conception and the day of birth — it was raining buckets (the number two here seems to be of vital symbolic significance, since most golf addicts indulge their illness two times each week). If one observes the weather paranoiacs it will be found that no one can reverse their delusional system. They are convinced beyond reason that it always rains on the two afternoons each week that they have set aside for golf. These individuals are convinced that the "Fates" are truly against them, since Monday, Tuesday, Wednesday, Friday, and Sunday will be beautiful, but Thursday and Saturday will bring horrible storms. On some days the Fates will be especially playful and allow the sun to shine all morning on Thursday and Saturday. Inevitably, however, by 11 a.m. it will start to cloud up. By the time the addict gets into his car to start to the golfing meadow with the 18 holes it will have started to sprinkle a little rain. And before he has had time to change into his golf shoes and pick up a few tees, a veritable biblical flood has deluged the golf course. To add to his almost maniacal frustration, the rain seems to be localized to the golf course. Just across the street from the club house the sun will still be shining — maddeningly — sadistically!

Of course, the Weather Paranoiac has this experience only four to six

times per year, but he will never believe it if you try to tell him so. These patients are often confused with individuals who suffer the "Monday Morning Blues." The Weather Paranoiac is not "blue" on Monday because he hates to relinquish his dependency and return to work, however. The true Weather Paranoiac wakes up depressed on Monday because his first thoughts with the dawn of the new week are that it will probably rain like hell on Thursday and Saturday afternoons. He is so obsessed with this paranoid system that if by chance there is beautiful weather on these two days, he becomes so frustrated that he hates nature, he hates people, he hates himself, and he hates golf! He still plays 18 holes, but his hostility is so aroused that he cuts his golf balls, chews up the course, plays a miserable game, and can't get back to the club house fast enough to get stone drunk and return to Nirvana.

Needless to say, these people are untreatable!

Golfing Sado-Masochism Related To the Oral Stage

In observing quietly the activities around any golfing meadow, evidence of various types of *oral masochistic* and *oral sadistic* syndromes are readily seen.

Oral Masochist: I should first like to describe some of the typical personality characteristics of the orally masochistic golf addict. These individuals (as their personality patterns clearly demonstrate) experience their primary infantile trauma within the first three to five months of life. The nuclear conflict therefore pertains to the oral receptive — or oral sucking — phase of psychosexual development. The illness usually is most prominent in these individuals between the ages of 35 and 50. Many of them are members of golf clubs, but a very interesting observation to be made about these oral masochists is that they almost never play golf! They congregate around golfing clubs because this seems to afford them a socially acceptable and approving environment in which to gratify their oral-receptive impulses and needs. They differ from the usual golf addict in that they seem to appear at the club house 6 or 7 days a week. They are almost always closeted in a small smoke filled room which interestingly enough seems to be set aside primarily for their use.

I have fortunately had occasion to work with one patient of this variety in rather intensive investigative psychotherapy. Examination of his dreams revealed that they were replete with themes about houses or buildings of varying structure. In these dreams the patient felt very protected from severe electrical storms by closeting himself in one small room somewhat isolated from the rest of the house. With free association the patient very quickly arrived at the manifest content of the dreams; namely, they suggested to him the peculiar comfort he derived from spending hour upon hour in the small, smoke filled room in the club house. After several hours of intensive free association, the patient was able to recognize the latent or deeper meaning of these dreams. The symbolism of a protected room within a house came to be clearly recognized by him as being suggestive of his desire to return to the safety and peace of his mother's uterus.

As I mentioned earlier, these people rarely play golf. They used to, but it led to so much frustration that complete personality disintegration became imminent. So they remain in the club house waiting for all the active golfers to come in from their rounds and they bask in the reflected glory of whoever happened to achieve a low score. While in the "room" — or uterus — as you will, they are not inactive however. They drink alcoholic beverages constantly; and they gamble. Here their masochism becomes eminently clear, since they consume very little alcohol and rarely allow themselves to feel good — or high. Their drinks are usually composed of one or two drams of alcohol in a 16 ounce glass filled with water. This does not produce any feeling of euphoria, but it does result in a constant distention of the bladder. Since they are usually playing poker or gin, it is always inopportune to release their bladder distress, so they just sit there in pain. (It is needless to say that they always lose money in their gambling.) When blissful relief of bladder distention is finally possible, these gentlemen can always be heard to emit loud sighs of utter relaxation very suggestive of the manner in which an infant feels totally gratified after nursing successfully at the breast.

My attempt at psychotherapy with this one individual met with total failure due to irreversible resistance. He kept reiterating the same phrase after all my carefully chosen and timid interpretations of his conflict and obvious symbolism; showing a complete lack of insight. That is, he would always say, "I don't give a damn what it means, I enjoy it."

I'm afraid other patients of this variety would demonstrate the same hard core of resistance to psychotherapy.

Oral Sadist: Examples of oral sadists about golfing meadows are really quite common. In keeping with psychoanalytic theory, their nuclear conflicts arose during the oral-aggressive — or oral biting — stage of psychosexual development. In a nutshell, albeit not very scientifically put, these people talk you to death. Oral expression is simply impossible to control. They talk during their opponents' back swing, down swing and follow through. They are especially pleased when their opponent's ball hooks or slices and winds up in the water hazard, or out of bounds. Their sadism becomes clear in these instances, since they are never satisfied to say simply that this was tough luck. On these occasions they plunge into a maddeningly intensive critique of their opponent's (or enemy's) entire golfing history, attitude, swing, clothes, and everything else. Eventually they will wind up in some way by condemning their opponent's mother. By this time the connection with golf is completely lost, but this is of little consequence since the ultimate goal of the game for them is to find ever

increasing ways to release their pent up hostility for their own mothers.

One patient that I have observed with this syndrome seemed to demonstrate by his behavior that he probably had fantasies of omnipotence in regard to his oral aggressivity. This gentleman does not just annoy his partners by his talk. He yells constantly to everyone on the golf course. The sound of his voice is rarely lost to the oral masochist sitting in the club house, since he can be heard on every green and fairway. He tries to veil his hostility under a mask of outgoing friendliness, because he is often yelling and screaming cheerful greetings. The hostility is clear nonetheless, since the other players can almost never hit a drive, iron, or putt without hearing his raucous voice clanging in their ears.

Another patient of this type that I have observed seemed to demonstrate an unconscious awareness that his father was in some way responsible for the fact that his mother thwarted his needs during the oral-aggressive stage. This gentleman played golf horribly, but occasionally he would hit a good shot. On one such occasion this patient hit what appeared to be a perfect tee shot on a 230 yard par three hole. The ball was heading straight for the pin, but as fate would have it, it bounced on a small rock partially embedded in the fairway and veered sharply toward a tree in the rough. He felt immediate rage at being so cheated, but he contained his rage at first. As he walked closer to his ball his controls lessened. When he finally reached his ball and found it directly behind a tree guarding the green he exploded. His face became livid, his cheeks blew up until we feared they would burst, he smashed his two wood against the tree (breaking it neatly in two, incidentally), he threw his hands and head up toward the sky and he roared — "God — I ain't askin' you to help me — just don't hinder me!" The hostility toward the Father figure seems clear.

I have no statistics about the treatability of the oral-sadistic golf addict. One thing appears especially to be true, however, and that is that they are hell to play with!

The Anal Stage

Anal Retentive: As with the oral stage, the psychoanalytic literature commonly divides or separates the anal stage of development into two phases — or types, namely, the anal retentive and the anal expulsive. Among golfing addicts these subdivisions are often fused, but some differentiation can be made. I would first like to describe the anal retentive golfer.

It has been well documented, that children from one to three years of age are frequently thrown into conflict with their parents because of the need for toilet training. The child very quickly learns that in the act of elimination there appears to reside some mystical but great power over the parents. To comply with parental wishes brings approving responses from the parents, and inversely, when the child retains his excreta he can in this manner control and demonstrate hostility toward the parent. Finally, we are all quite well acquainted with the dynamic formulation whereby children equate excreta with money.

The Golfing Computer: With this brief introduction, I would now like to describe an example of the *Anal Retentive* Golf Addict. I have chosen to refer to these people as the *Golfing Computers* for reasons which I hope will soon be clear. The patients really do not seem to be interested in golf either. They like to play in "*gangsomes*" (which is a unique though frightening term frequently heard around the golf meadows) and their whole purpose seems to be to see how many and varied bets they can make on the outcome of the match. They are fiendishly capable of betting *with* and *against* everyone in the gangsome; individually, in foursomes, or collectively. How they keep track of all their bets is in itself a considerable wonder, but they are amazingly accurate. It generally takes them 3½ hours to play 18 holes, but they spend four or five hours telling everyone what they won or lost, and who owed how much to whom. Most of the other members of the "gangsome" will retire immediately to the shower after the round, but these people make a mad dash for everyone's score card. They then ensconse themselves comfortably in a chair, they order a drink, and become completely lost in their world of "filthy lucre" as the phrase goes. They don't care how they played golf — they just want to figure out the bets. It is partially due to these individuals that I felt this entire golfing syndrome should be referred to as a pecuniary one.

One other finding among the Golfing Computers that would be of interest is the fact that on the golf course they seem to speak an unknown tongue. When we listen to them talk, it seems that golf shouldn't be called golf at all. They seem to think of it as "A Dollar Nassau with Automatic Double on the Backside (symbolism again) — Adjust Within 50% — and You Can Sign Whenever You Go Two Down." It's a hell of a complicated way to say golf, but this is how the computer says it. (Incidentally, the number "2" again seems to be quite symbolic in this matter of giving their opponents the right to "sign" when they go two down. When children desired to have a bowel movement, they would say they wanted to "go number two." So much for the anal retentive — or Golfing Computer Syndrome.

Anal Expulsive: Examples of golf addiction with primary conflicts of the anal expulsive variety are very easily recognized. They seem to assume a characteristic posture with every golf shot. Because of this posture I have labeled this the "*Squatters Rights Syndrome.*" With every shot in their game they assume a position which is disturbingly similar to the appearance of a man on a toilet. At no time is this posture more clearly symbolic than it is on the putting green. These people are extremely frustrating when one is in the following foursome, since it seems as though every time you look toward the green ahead, there they are squatting — and putting. They enjoy this entire procedure so much that they

seem to spend hours in this position on the green, and it inevitably causes someone in the following foursome to say with considerable anger, "I wish he would putt or get off the pot."

If it is upsetting to follow a foursome including such an addict, it is equally as frustrating to play in a foursome with them. They seem to have quite a morbid pre-occupation with waste products of the body, and when they play 18 holes they verbally fertilize the whole golf course. It seems to me they call the game "Oh Crap" — because every time they make a shot this is what they say. I'm certain you have all seen many of these individuals in your professional experience.

THE PHALLIC STAGE

The next stage of psychosexual development is, of course, the Phallic Stage. As a result of my professional experience, I have found that those individuals who have entered the phallic stage successfully, but who experience serious conflict during it, develop personalities which are rigidly fixed in a state of perennial adolescence. As might be expected (due to the greater degree of maturation they have achieved) these individuals are among the happiest and most mature of the golf addicts. Truly mature genitalization of the libido is nonetheless impossible of attainment, and therefore these people also continue to be slaves to their sado-masochistic pursuits in the golfing meadows. There seem to be innumerable phallic characters on American golf courses, and I'm certain you could give many examples of your own. I would like to describe only three types. Let me caution you, however, that this is not in any manner a statement that I consider these three types to be all inclusive. Actually a great deal of further research will be necessary before any conclusive statements can be made about this large group of addicts.

The Long Knocker's Syndrome: The first group of individuals in this category appear to be suffering from what I have chosen to refer to as the Long Knocker's Syndrome. These individuals are very easily recognized. They have discovered that the golf club (or phallus if you wish) is truly a remarkable instrument. In addition to this these people are, as often as not, blessed with a quite smooth, attractive, and powerful golf swing. Due to the well recognized return of secondary narcissism associated with adolescence, these patients love to have their golf swing admired, so they look like perpetual motion machines when seen. If ever you look across a golfing meadow and think you see a windmill, you are looking at an addict with the "Long Knockers Syndrome." For each swing they actually take at the ball, dozens of preparatory swings are demonstrated to the admiring audience. If an observer is foolhardy enough to say to one of them, "You really have a beautiful and natural swing" — all hell breaks loose, since they will oblige with so many demonstrations that their opponents feel that a veritable tornado has suddenly come up!

Some of these individuals will occasionally, and quite accidentally, learn how to achieve low scores, but the lack of true maturity is still clearly seen in the fact that this doesn't matter. Their primary aim is simply to knock the ball clear out of sight, and then wait for the inevitable admiration from the gallery. These patients are frequently placed in the position of true hero symbols by the more impotent and frustrated oral and anal sado-masochists. One sage gentleman whom I knew in college summed up the basic lack in the character structure and insight of the Long Knocker in a statement he made about billiards; namely, "It's not the size of the cue you use, but the English you put on the ball with it that really counts." The Long Knocker is still not truly effective, and doesn't care. He simply wants to demonstrate his 3 megaton explosive orgiastic fantasies with a golf club.

One other facet of the personalities of these individuals is that they love to play in Scotch foursomes. They usually play with older women too, so that the persistence of the infantile fixation to the mother as a love object is readily observed.

The Golfing Chameleon: A second group of golf addicts with fixation in the phallic stage seems to me to be well classified by the description — *Golfing Chameleons*. I suspect that in terms of numbers of cases, this type of addict is the most common of all. As can probably be surmised from my terminology for them, they are characterized by the fact that they never seem to have the same golf swing twice. They constantly study it, cuss it, discuss it, re-evaluate it, and change it. The whole point of the game for these people is to see how many suggestions they can get from innumerable sources of reference about their swing, and to change it in an endlessly repetitive manner.

The Age Shooter: The last of the phallic group of addicts I refer to as the "Age Shooter." This syndrome usually doesn't appear until the patient is 70 years of age. It is quite progressive, however; these gentlemen are not just emotional cripples . . . they are physical cripples as well. They cause a rather considerable number of ulcers among golf professionals since when they depart from the first tee, the pro is never quite certain that they are going to return. They are remarkably tenacious, however, and they usually do. They seem to me to be an older version of the Long Knocker, since they are frequently low scorers, and they demonstrate the clinging to perennial adolescence very clearly. By a fiendishly simple but effective bit of rationalization, they feel younger the older they get. The entire ritual of "shooting their age" becomes a truly remarkable process of trying to maintain their youth. These gentlemen are invariably the most pleasant and generally best adjusted of the golf addicts. They are truly a pleasure to play with. Since they do not seek a gallery, they are not constantly demonstrating, their hostility is well mellowed, and they just go quietly about their business of "shooting their age."

GENITALIZATION OF THE LIBIDO

We have now arrived at the state of maturity — namely, genitalization of the libido. By definition, the individuals who fall into this category are mature. They have truly arrived. Obviously a mature individual would not be caught up in any form of sado-masochistic activity. It is natural, therefore, that these people would not play golf, and they don't! They tried it briefly in their adolescence, but insight was quickly gained. With successful "working through" of the conflicts they concluded that to play golf would be to waste their youth, so they soon gave it up. Since they are mature, however, they do not condemn either the disease or the addicts. They are accepting of both; but any association they are ever to have with the game must be adult, potent, effective, and of the highest standards. Many physicians are found among this group and their orientation to golf is quite similar in all cases. On Thursday afternoons they do not even think about golf, since they prefer to work. On Saturday afternoons, they generally take time off, but they repair directly to their dens and peruse the medical literature. At precisely 4:50 p.m. on Saturdays they stop reading, they fix one potent highball, they seat themselves comfortably and they watch golf on television. They do not continue to read the medical literature during commercials, for this would demonstrate a degree of personality rigidity. During the mid-commercials, however, they fix one more highball. After watching only those individuals who have truly arrived at genitalization of libido in reference to golf for one hour, they turn off television, eat supper, and return to the medical literature.

In conclusion I would like to point out briefly some of the pecuniary aspects of golf addiction. Golf equipment is quite expensive. It is impossible to play the game without betting. There are nearly as many golf balls sold annually as Valium® or Librium® since one of each will last 18 holes, but many addicts require 18 golf balls per round. The essence of sado-masochism is that either the infliction of pain on oneself, or on another person, is a prerequisite to the experiencing of pleasure. For this reason, I will terminate this article and you and I can repair to the golfing meadow to suffer and enjoy ourselves the rest of the day.

Acknowledgment

I am indebted to the late Dr. Jerry Hornouski of Asheville, North Carolina, for some of the ideas and thoughts expressed in this article.

SPECIAL ARTICLE

Cesarean Section in Modern-Day Obstetrics

O. Hunter Jones, M.D.

IN my paper before the South Atlantic Association of Obstetricians and Gynecologists in Havana, Cuba, in 1953, on "The Trend in Cesarean Section in Recent Years," I stated that: "Today, maternal and fetal survival alone is not enough. The patient has the right to expect, under ordinary circumstances, that she will be fully restored to her former self, and without cystocele, rectocele, and prolapse insofar as our knowledge of their prevention goes, and that she will have a live and healthy baby. If cesarean section is elected, she has the right to expect that it will be performed before fetal damage takes place insofar as present knowledge will allow this decision to be made. In our present lack of knowledge concerning many problems, this decision cannot always be based upon absolute proof, or complete accuracy. There has to be some leeway, if we are to save babies. Moloy has stressed the fact that we do not know the limits of safety of the squeeze effect of labor in disproportion . We can also say, for patients with bleeding, as in placenta previa and accidental hemorrhage, that we do not know the limits of safety for these babies. Therefore, not only is it true, as Dieckman has stated, that 'Cesarean section is now a recognized procedure for the management of many obstetric and fetal complications formerly treated by vaginal delivery, but it is my opinion that cesarean section is the indicated procedure.' "

I will take it for granted that you and your group, regardless of whether you are a labor-delivery nurse or a supervisor, yearly study your own statistics. Then, you should discuss them with your chief and your obstetricians. This is most important. Today, we are hearing more and more discussion about the nurse's role. My answer is that you are a very vital part of labor and delivery. Tell your doctor what your observations are, and tell him what you think. The good obstetrician fully appreciates this. It means that you are an integral part of the final decision-making process.

At Charlotte Memorial Hospital in 1951 the cesarean section rate was 5.1%, and the total fetal mortality rate from all causes was 4%. In 1961, the section rate was 3.1% and fetal mortality 2.7%; in 1971, the section rate was 6.7% and fetal mortality 2.9%; in 1981, the section rate was 14.4% and the fetal mortality 3.0%.

The section rate in our four North Carolina medical school hospitals in 1981 averaged 16.8%. It was 20.3% at Bowman Gray, 17.3% at East Carolina University, 16.75% at the University of North Carolina, and 13% at Duke University. Remember all of these hospitals are referral centers. Our rate here at Charlotte Memorial Hospital was 14.4%. We are also a referral center for this area.

Cesarean section in this country, as elsewhere, has changed. The conventional "Once a cesarean, always a cesarean" philosophy has been challenged by the American College of Obstetricians and Gynecologists. The report of the college's Committee on Obstetrics: "After a review of more than 28,000 vaginal deliveries following prior cesareans, the committee has determined that under proper conditions, many women who have had a cesarean birth may safely be considered for vaginal delivery."

Now what does this mean to your obstetricians and to you in your setup? It means two things: First, the obstetrician has to survey all of the obstetrical facts, signs and symptoms. Secondly, it means that you, by close observation and application, should, and must, play a vital role.

Now you are well aware of the indications for cesarean section: cephalopelvic disproportion, abnormal presentation, mainly breech; abruptio placenta; placenta previa; low placental implantation; fetal distress; dystocia; abnormal labor; toxemia of pregnancy; medical diseases; age (elderly primipara); previous section, etc. A new factor needs to be mentioned and that is fetal scalp blood pH determination. It is being advocated,[1] and it apparently is playing a vital role in determining the need for cesarean section. Also, Zalar and Quilligan state that: "Fetal scalp sampling has prevented unnecessary cesarean section when the fetal heart rate tracing suggested distress."[2]

The proper use of intravenous pitocin has undoubtedly prevented many cesareans. Now there are differences of opinion on the use of intravenous pitocin stimulation in the patient who has had a previous section. If used, it must be done so with great caution.

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Lavin et al have noted that "Approximately 70% to 80% of patients with a non-recurrent indication for their primary cesarean section can be expected to deliver vaginally safely when allowed a trial of labor. Patients with a prior vaginal delivery obviously seem to have a better prognosis for vaginal delivery than those without a previous vaginal delivery. It should be remembered that patients with a previous classic cesarean section incision have a substantially increased risk of uterine rupture, and, if uterine rupture occurs, it is more likely to be complete and to result in perinatal death. Therefore, a trial of labor in this group is contraindicated. Patients with a prior cesarean section performed for a non-recurrent cause without labor, or after a short labor, may have a moderately increased risk of uterine rupture. There is no good evidence to show that febrile morbidity after prior cesarean section predisposes to uterine rupture. There is little if any prognostic significance with regard to uterine rupture from the number of previous cesarean sections, intervening vaginal deliveries, placental localization, degree of uterine distension or interval since the previous cesarean section. Patients who sustain a uterine rupture may occasionally require hysterectomy."[3]

The American College of Obstetricians and Gynecologists has issued new guidelines calling a trial of labor an "appropriate option" for women who have had previous cesarean sections, providing patients are carefully selected and facilities are adequate to monitor the progress of labor. The chairman of the college's Committee on Obstetrics, Dr. Robert Cefalo,[4] stated that the guidelines do not, however, represent any attempt to set a new standard of care, but are "opinions and recommendations."

The college recommends that the hospital should be capable of electronically monitoring fetal progress and of assembling a staff to perform an emergency cesarean within 15 minutes, and further advises that women with a classical cesarean incision should not attempt vaginal delivery. Also, opinion is divided concerning the advisability of allowing women who have had two or more previous cesareans to attempt a trial of labor. More data are required for consensus.

As regards the medico-legal aspects of all of this, I have no real opinion. I can only say that the well-trained obstetrician-gynecologist of today should do what he, medically, thinks is right. There is no other answer. For example, if my patient is in labor at night, I am going to go to the hospital and be there. Insofar as obstetrical judgment is concerned, this is an individual problem — and stands on its own. Furthermore, the patient's desires or likings should play no part in the decision to section or not to section. Obstetrical judgment must not ever be influenced by a patient's whims.

PREMATURITY

Petrie says "Because the leading killer of the small baby today is not respiratory distress syndrome but intraventricular hemorrhage, therefore, if you want to deliver the small baby intact, the least traumatic way you can go about it is the best, and usually by cesarean section."[5]

On the other hand, Freeman considers that cesarean can be a risk to the mother. "We continue to deliver premature breeches by section; but the vertex presentation, with careful monitoring, can be delivered vaginally."[6]

Many obstetricians across the country have made it clear that the answer is not yet available regarding the best way to deliver the premature breech, but on the basis of current data it appears that cesarean section is indicated.

BREECH PRESENTATION

There appears to be a continuing trend towards delivery of breech presentation by cesarean section. The U.S. Department of Health and Human Services report on cesarean childbirth stated: "Debate surrounding the method of delivery for the fetus presenting as breech continues and is influenced by the described complexities and lack of definitive information on later infant development. It is apparent from a literature review that the choice for cesarean birth is complicated by the additional maternal morbidity and mortality of the operative procedure when compared with vaginal delivery. It is also apparent that most reviews of breech births suggest that abdominal delivery may be associated with less risk to the premature fetus. This issue remains less clear with respect to the term frank breech delivery. However, vaginal delivery of the term breech should remain an acceptable obstetric choice when the baby is not oversize (anticipated weight of less than 8 pounds) and the pelvis is normal; also frank breech without a hyperextended head; and delivery conducted by a physician experienced in breech delivery."[7]

Practically speaking, it appears that cesarean section for premature breech gives better survival rates. This is a complete change in our thinking and in our practice. The only suggested claim we have is in better fetal survival figures — and this, after all, is still somewhat controversial.

A recent Canadian study states that "Management of the breech presentation has been and still is a hotly debated issue. Although there is general agreement about the hazards of unselected vaginal delivery of the term breech, various authors disagree as to what the proper rate of cesarean section should be for the term breech, with suggested rates varying from 15% to 100%."[8]

In 1959 it was proposed[9] that all breeches be delivered by section. However, more than 15 years later many obstetric centers found that whether vaginal delivery (breech) may prove difficult and hazardous cannot be determined in advance. Other groups have demonstrated that when pelvimetry, fetal monitoring, analysis of labor and the ability to perform an immediate section are followed, vaginal delivery can be performed in approximately 50% of breech presentations without increased perinatal morbidity or mortality. Furthermore, this study showed that an increase in the section rate for term breech deliveries

from 22% to 94% did reduce unfavorable outcome significantly (although a trend toward decreased trauma and death may exist). In New York City the municipal hospitals have stabilized the rate of cesarean births to 15%, compared to 20.5% in the city's private hospitals and 17% nationally. It is interesting that in the New York municipal hospitals they have a policy of encouraging normal deliveries, even if a previous birth was accomplished by cesarean section.

Statistics from the National Institutes of Health in 1980[7] showed that "During the 1970s the cesarean birthrate in the United States increased about threefold from 5.5% in 1970 to 15.2% in 1978, and appears to be continuing to increase. This trend is pervasive affecting hospitals and patients in all parts of the country."

In 1978 the NIH concluded that 31% of all cesareans performed were done because it appeared that the birth would be difficult or involve complicated labor; breech births accounted for 12%; fetal distress for 5% and repeat cesareans for 31%.

Admittedly, the cesarean section rate has increased. What the rate should be in your hospital, or here at Charlotte Memorial, has to be determined by your staff, after adequate training and knowledge and experience, to make the best decision. At times it is difficult — and yet, this is our responsibility. There is no other way — the obstetrician has to carefully evaluate every individual case. There is no other answer.

Questionnaire returns from representative medical schools and obstetricians throughout the U.S.A. suggest that a section rate of 10% to 15% would be the average, depending upon the type of patient census of the individual hospital.

In 1981 our rate at Charlotte Memorial Hospital was 14.4%. Where will it end? That is a good question. I would hope that it would not go beyond 15% at the most — and it should not if we concentrate on vaginal delivery of previous section cases where indicated and with the proper setup and safeguards. Your hospital can do the same.

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Toxic Encounters of the Dangerous Kind

A Legacy of The Third Reich — Organophosphate Insecticide Poisoning

For those of us for whom the Third Reich was more real than the pictures in *Life* magazine and "Hogan's Heroes," no reminder is needed of that terrible time in world history. But what is interesting to me as a "poison" person is the fact that some of the handiwork of the Nazi era endures. Example: the organophosphate. These compounds were developed by Germany as "nerve gases" before and during world war II. These substances were almost ideal chemical warfare weapons, i.e., almost odorless and invisible, act quickly by contact with skin or by inhalation, quite stable and very toxic. They were known at the time to be very effective insecticides, and the first organophosphate insecticide compounds were developed as a substitute for nicotine insecticides since nicotine compounds were hard to come by in the years just prior to WWII. It is alleged that the Nazi war machine never used these chemical weapons in combat.

After DDT was banned in the early 1970's, the organophosphate insecticides became increasingly popular in this country and this popularity persists to date. What middle class home and garden owner doesn't have some form of organophosphate or carbamate (a similar, but somewhat less toxic compound) insecticide in the garage? What American farmer could do without this very dangerous stuff? DDT may have been bad for the ecology, but it did not kill a whole lot of people; organophosphates are probably not that bad for the environment on a long term basis, but they sure can kill people or make them feel very "poorly" for a long time.

The basic biochemical lesion in this poisoning is caused by the anticholinesterase action of the organophosphate compounds. In order for acetylcholine to properly function as a neurotransmitter there must be proper release followed by rapid hydrolysis of this chemical. If the hydrolyzing enzymes are inhibited, i.e., by the anticholinesterase such as organophosphates, the acetylcholine accumulates and produces on-going abnormal stimulation of the receptors. The phosphate radicals in the organophosphate compound bind irreversibly to these enzymes. This remarkable accumulation initially stimulates and ultimately paralyzes cholinergic synaptic transmission in the CNS, autonomic ganglia, parasympathetic nerve endings, somatic nerves and a few sympathetic nerve endings such as sweat glands.

The clinical features of organophosphate poisoning are divided into three general categories: (1) The muscarinic (AKA parasympathetic features) are those that classically are associated with this poisoning and are best remembered by the acrostic *S-L-U-D-G-E* which refers to the patient's presentation clinically with *s*alivation, *l*acrimation, *u*rination, *d*efecation, *g*astro-enteric cramping, and *e*mesis. These patients are "wet" and seem to be losing fluid from all the body orifices except their ears; the bronchorrhea can be particularly intense. *Miosis* is a very characteristic feature but of course is not present in all cases. (2) The *nicotinic* (involving the somatic motor and sympathetic nerve endings) features result in muscle fasciculations, muscle cramps and fatigue, loss of deep tendon reflexes, paralysis, tachycardia and hypertension. The fasciculations can be quite helpful in clinical diagnosis (3) The *CNS* effects are a laundry list of bad things such as severe headache, tremor, restlessness, ataxia, generalized weakness, emotional lability and confusion, slurred speech, coma, seizures, depression of cardio-respiratory centers. I have seen these same CNS effects in house officers who see their first organophosphate poisoning case and don't know what to do.

It is well to note that the very typical organophosphate poisoned patient has a pronounced *garlic* odor. If a patient with S-L-U-D-G-E and a garlic odor presents to your office or E.R. you can assume one of three things; either he/she has been eating linguini with clam sauce at my house or the patient has been poisoned by this "nerve gas"-insecticide or none of the above.

This poison can be readily absorbed by a variety of routes: skin, hair, finger and toenails, conjunctivae, GI tract, mucous membranes, lungs. The onset of pathological features occurs most rapidly by inhalation and least rapidly percutaneously. Although massive exposure can produce problems within minutes, the majority are sick within 12 hours or 24 hours at the outside. If the pathological features do not begin until much after 12 hours post exposure, you probably ought to seriously consider another diagnosis. The *muscarinic* (parasympathetic) effects are usually the first to appear followed by the *nicotinic* effects. The *CNS* effects are less common than the other features and in fact may be absent.

The more common organophosphate compounds involved in accidental poisoning include parathion, malathion, Diazinon and trichlorofon. Parathion is the most frequent insecticide causing death and is many times more toxic than malathion. By the way, malathion (0.5%) is now on the market, in lotion form, as the newest treatment for head lice. (I view this with some trepidation.) Preparation and use of these insecticides by weekend gardeners can be dangerous if done casually and if storage is improper. When these products are converted from their powder form to a concentrated liquid, the result is the color and consis-

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tency of chocolate or coffee or tea or cola or malted milk shakes with fairly obvious results for an inquisitive pre-school child.

The diagnosis, as usual, depends on a good history of exposure to the chemical plus a careful clinical assessment which means putting together the early parasympathetic (muscarinic) features of S-L-U-D-G-E plus miosis and realizing that this probably means an anticholinesterase poisoning due to organophosphates. The penultimate diagnostic procedure is the erythrocyte cholinesterase measurement. When the cholinesterase activity is 50% or less of normal, combined with the abnormal clinical features, you have a diagnosis. However, most hospitals do not perform this test and if you have to send the specimen away for analysis the turn-around time is too long to be of any use clinically. These patients will not wait while the blood sample goes on a trip across state or across several states. What you should do to establish the diagnosis is what we and many other hospitals do, i.e., give atropine as a diagnostic trial. The principle is quite simple. Patients poisoned with organophosphates are atropine-refractory and therefore megadoses are required in treatment. If you give a high enough dose of atropine to a patient not poisoned with an organophosphate the patient becomes atropinized — with dry, flushed skin, dry mucous membranes, tachycardia, and usually mydriasis. If atropine, given in doses of 1 mg-2 mg for an adult or 0.05 mg/kg mgm for a child, does not produce this atropinization then you can assume the patient is *atropine-refractory* and begin treatment for organophosphate poisoning. The atropinization in the non-poisoned patient usually occurs within 5-20 minutes. It is well to bear in mind that *leucocytosis* and *hyperglycemia* are common in this poisoning.

There is, of course, a differential diagnosis to consider in this poisoning. Some of the considerations are poisoning due to muscarinic-containing mushrooms, encephalitis, hypertensive encephalopathy, asthma, pneumonia, meningitis, any drug overdose producing miosis, e.g., opiates, PCP, phenothiazines, clonidine, meprobamate, ethanol, etc.

The treatment of organophosphate poisoning is a bit more involved than giving the antidote and watching the patient respond. After you have secured the airway (if needed) and given airway assistance, *atropine* — the drug of choice — should be given. Atropine is a physiologic antidote which blocks the action of acetylcholine on parasympathetic receptors. (Be sure to correct cyanosis before giving atropine in order to obviate the added risk of hypoxia-induced ventricular dysrhythmia.) When atropinization has been initiated — for an adult 2-4 mg IV or 0.05 mg/kg in a child — then cautious gastric emptying of the stomach and decontamination of the patient should be performed. This decontamination is critical; the decontaminating personnel must protect themselves with protective aprons and gloves made of rubber or neoprene. The patient's clothes should be quickly removed. The patient's skin, hair and nails should be decontaminated with soap, water and ethanol. Tincture of green soap is especially useful; this poison is soluble in alcohol. Patients poisoned with organophosphates require extremely large amounts of atropine. Do not be timid — most therapeutic failures in the poisoning are due to inadequate atropinization. Failure to give enough atropine in the highest dose tolerated is far more serious than the effects of an atropine overdose. Atropine is given every 5-15 minutes until there is a cessation of oral and tracheal secretions; do not use mydriasis as an end point. You give atropine and keep giving it until the patient "can't spit." The amount of atropine required to stop secretions is about 10 times the normal dose — the average adult patient requires 40 mg/24 hours. Atropinization should be maintained for 24+ hours. Atropine has a much better therapeutic effect on the muscarinic (parasympathetic) receptor sites and has little or no effect on the nicotinic or CNS abnormalities.

As early as possible in this poisoning, pralidoxime (AKA 2-PAM, Protopam), etc. should be given. This drug is a cholinesterase regenerator and works quite quickly in restoring cholinesterase activity; it's a specific antidote for irreversible cholinesterase inhibition. Its action is primarily on the nicotinic effects of the poison. The dosage is: *adults:* 1-2 gram IV, slowly; *children:* 25-40 mg/kg (may repeat every 3-8 hours if needed). Until quite recently it was widely held that any CNS abnormalities resulting from this poisoning should be treated symptomatically. However, some recent work suggests that oximes such as pralidoxime can enter the CNS by crossing the blood brain barrier and can help to reverse such CNS abnormalities as coma. This is indeed an exciting piece of work!!

Death in this poisoning is usually due to respiratory failure caused by a combination of excessive bronchial secretions, bronchospasm, paralysis of the respiratory muscles and paralysis of the respiratory center. Most deaths due to organophosphates occur within the first 24 hours; if a patient survives two days death is unlikely. Occasionally an unfortunate patient will suffer long term consequences from this acute poisoning such as myonecrosis, delayed polyneuropathy, personality changes, depression, confusion, and thought disorders.

Have we seen the end of this Legacy of the Third Reich? I am afraid not!! The Soviets are alleged to have used this terrible stuff against the Afghanistani. These chemicals are also a major feature of the United States' chemical warfare program — the so-called "binary system." Once such a weapon is invented, it is very difficult to un-invent it. Atropine, anyone??

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Editorials

Some Empirical Findings on the Right to Refuse Treatment

Over the last 15 years, we have seen revisions in mental health laws that profoundly affect the treatment of psychiatric patients. The intent of these revisions was to give greater recognition to the constitutional rights of mentally ill patients. Among the claims of rights in psychiatry today are the right to treatment, the right to the least intrusive form of treatment, the right to be protected from harm, and even the assertion of a right to die. Unquestionably, the patients' rights movement brought about many needed changes, but has altered our perceptions of the traditional doctor-patient relationship. Rights language is adversarial and emphasizes the patient's need to be protected from actual or implied harm. Historically, medicine has not been understood in terms of rights language, in part because physicians understood and accepted their obligations to patients and the art of medicine in the absence of patients' rights claims.[1]

Legal advocates for the mentally ill have succeeded in persuading the courts to formulate treatment rights as if they constitute needs. Since the early 1970's the courts, troubled by testimony of alleged patient mistreatment and blatant neglect, have at times rendered decisions that suggested the courts would eventually assume the responsibility for managing prisons and state mental institutions. In actual fact, it is beyond the powers of the courts to implement quality treatment given the inadequate funds allocated to most penal and state mental institutions. It is important to note that many of the decisions affecting patient care were rendered by lower federal courts and the Supreme Court has been reluctant to affirm decisions that deal with treatment.[2] For example, the Supreme Court in a recent decision regarding the safety of a hospitalized mentally retarded patient, e.g. *Youngberg vs. Romeo*, expressly disapproved of judicial intrusion into medical matters.

Judicial skepticism about the quality of psychiatric care in state mental institutions became apparent in 1971 with the case of *Wyatt vs. Stickney*, where the issue was involuntary commitment without treatment, and the subsequent case of *O'Connor vs. Donaldson* where the patient was awarded financial recompense for being confined without treatment. More recently, the cases of *Rogers vs. Okin* (now *Mills vs. Rogers*) and *Rennie vs. Kline* seek to grant psychiatric patients the unequivocal right to refuse treatment. The right to refuse treatment has become one of the most divisive issues confronting psychiatrists and mental disability lawyers. This conflict has drastic consequences for emotionally ill patients, their families and communities. Ostensibly, the controversy with the aforementioned cases of treatment refusal was inspired by the poor conditions in state mental hospitals in Massachusetts and New Jersey respectively. I contend that forced medication seldom becomes an issue with private patients where therapeutic alternatives are often available. Instead, treatment refusal is primarily problematic for mental health professionals who work in state mental hospitals and in prisons where there are few therapeutic alternatives. It should be emphasized, however, that only a small percentage of patients refuse treatment even when granted refusal rights. Invariably, the patients who most often protest treatment are extremely ill, uneducated, and poor, and indeed these patients pose difficult therapeutic challenges.

Patient advocates argue that informed consent is fundamental to any discussion about treatment refusal. Informed consent, initially invoked in surgical cases, has limited usefulness when the patient's capacity to comprehend and make rational decisions is severely impaired. Informed consent means that the patient must be told about what is to take place, the nature of the ailment, the nature of the proposed treatment, the benefits and risks of treatment as well as alternatives. There is a need, especially in psychiatry, to educate patients about all aspects of their illness and the proposed treatment, but informed consent must be tailored to the needs of the individual patient. Otherwise, obtaining informed consent may become a ritual merely to avoid legal entanglement. Today, it is not too uncommon for mentally ill patients in prisons to not only refuse treatment, but request inappropriate forms of therapy based on their own diagnosis. Under the police powers of the state, medications may be forcibly administered, in most areas of the country, to prevent physical injury if the need to do so outweighs the potential harm to the patient and steps have been taken to rule out less intrusive alternatives. Psychiatrists would prefer to treat severely impaired patients where dangerousness is not necessarily imminent, but for obvious reasons we hesitate to medicate patients involuntarily to prevent further deterioration of their conditions (parens patriae).

I seriously doubt that permitting mentally ill patients to participate in therapeutic choices, regardless of their emotional state, will protect them from the hazards of inadequate care as argued by patient's advocates. Most importantly, I am concerned about the implication that mandatory patient participation in such a choice will force clinicians to reflect more carefully on the diagnosis and the proposed therapy. Physicians need not fear legal consequences to be

(continued on page 113)

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Midwinter Conference

Shaping the Future: A New Look at Medical Ethics

Laughter, music, new friends, and provocative speakers took center stage at the NCMS 1983 Midwinter Conference held at the Raleigh Marriott Hotel on February 2-4. Members of the NCMS Auxiliary held planning meetings and toured the Governor's Mansion on Wednesday and Thursday.

Governor Jim Hunt and most of the state's legislators appeared at the Marriott on Thursday night for a reception that enabled them to meet physicians and their spouses. Couples sampled delicacies from an "Around the World" buffet and danced to the music of the Casablanca Orchestra — a group specializing in Swing Era tunes.

On Friday a select array of speakers addressed the conference theme, "Shaping the Future: A New Look at Medical Ethics."

Marshall S. Redding, M.D., NCMS President, and Mrs. Betty Payne, AMA Auxiliary President, welcomed attendees. The program speakers included:

—Dan Suber, a staff attorney with the General Counsel's office of the AMA. Mr. Suber spoke on DNR (Do Not Resuscitate) orders and determination of death. He reviewed state statutes on these topics and observed that physicians are very seldom sued, charged, tried, or convicted in connection with these situations. He said physicians should be more concerned with their own good clinical judgment than with pending statutes.

—Spence Meighan, M.D., a faculty member at the American College of Hospital Administrators. Dr. Meighan presented an amusing, thought-provoking slide show satirizing the lack of medical leadership in our country.

—William A. Knaus, M.D., Director of Intensive Care Research at George Washington University Hospital and author of *Inside Russian Medicine*. He observed that Soviet physicians did not have an official code of ethics until 1971 and that the Soviet code was developed at the insistence of the Soviet government, which has complete control over the medical system.

—Representative Charles Rose (D-N.C.), founder of the Congressional Clearinghouse on the Future. Rep. Rose spoke on "Who's Beneath the Safety Net?"

—Edmund D. Pellegrino, M.D., former President of Catholic University of America and author of *Humanism and the Physician*. Dr. Pellegrino gave a very articulate address on the nature of medical ethics and the special relationship between physician and patient.

A wine and cheese reception co-sponsored by the NCMS and the Wake County Medical Society put a congenial cap on the conference.

Time for Questions. John A. Henderson, M.D., of Asheville, offered questions and comments following a speaker's presentation on DNR (Do Not Resuscitate) orders and determination of death. Questions and comments from attendees like Dr. Henderson made the conference more interesting and valuable.

Light Side. The 1983 Midwinter Conference had light moments as well as very serious ones. Attendees had many laughs during a provocative presentation by Spence Meighan, M.D.

The Promised Land. Spence Meighan, M.D., a native of Scotland, presented a satirical slide show on medical leadership . . . or the lack of it. Many attendees rated his presentation, called "The Promised Land," as the best of the conference.

Good Clinical Judgment. AMA Staff Attorney Daniel G. Suber gave an account of current state statutes on DNR and determination of death. He urged physicians to use their best clinical judgment in such cases rather than be swayed by pending statutes.

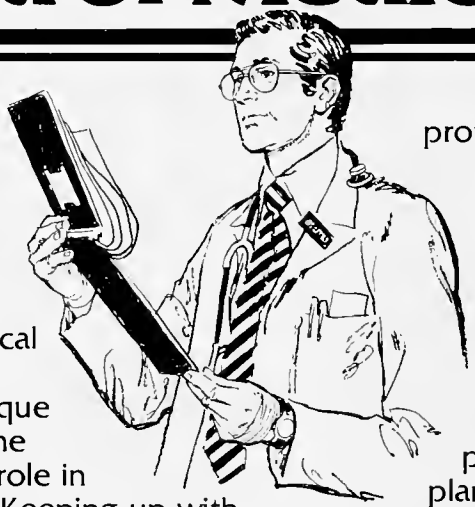
Almost A Half Century. Marshall S. Redding, M.D., NCMS President, presented John H. Anderson, NCMS Counsel *Emeritus*, with a special certificate in recognition of Mr. Anderson's half century of service to the Medical Society. Mr. Anderson also received a set of golf clubs.

Russian Practice. William A. Knaus, M.D., author of *Inside Russian Medicine*, told the audience that Soviet physicians enjoy no special status or compensation in the USSR and have comparatively limited training and equipment. Knaus said it is routine for Soviet physicians to withhold information from their patients out of a belief that bad news will frighten the patient and impede recovery.

1849 Precedent. Marshall S. Redding, M.D., NCMS President, welcomed attendees to the Midwinter Conference, noting that the precedent for the meeting was set in 1849 when the Medical Society drafted a code of ethics for physicians.

Keynote. Edmund D. Pellegrino, M.D., former President of Catholic University of America, delivered the keynote address entitled, "The Future of Medical Ethics: Whose Business Is It?" Among other things, Dr. Pellegrino explored the origins of medical ethics in western thought.

The Everchanging Field of Medicine...



A doctor's study of medicine doesn't end with medical school. Every medical advance or new technique redefines the physician's role in some way. Keeping up with these constant developments is part of being a doctor.

Times do change...and this is especially true in the field of medicine.

Yet, there are some things in life that don't change. Accidents and serious illnesses still happen unexpectedly. And financial hardship often follows — especially if you're kept away from work for a while.

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professionally responsible and the subtle threats of litigation carry the risk of creating an impoverished doctor-patient relationship. Also, I take a dim view of requiring a second opinion by a psychiatrist out of the clinical chain of command in a life threatening situation as a means of protecting the refusing patient from both the possibility of mistreatment and the possibility of not being treated at all. Another serious consequence of the right to refuse treatment is that psychiatrists may be caught up in systems of care, such as prisons, which fail to reflect our views of how treatment should be offered. Regrettably the courts hold psychiatrists accountable for medication standards even in mental health systems that psychiatrists are powerless to change.

The rhetorical questions surrounding treatment refusal have created enormous fears of litigation to the extent that some psychiatrists hesitate to forcibly medicate the most seriously ill patients. Thus, on occasions we choose to disregard the fact that severe mental illness may be successfully treated with appropriate medications and recovery may be diminished by delayed treatment. Of course there are risks associated with neuroleptics, but when properly prescribed and their use carefully monitored, the severe side effects often described in court by legal advocates are seldom seen. Further, neuroleptics are the drugs of choice for the treatment of patients with schizophrenia, a finding repeatedly verified in countless controlled and uncontrolled studies throughout the world.

Psychiatrists should not allow the claims of civil libertarians to prevent us from performing our professional and ethical responsibilities to those gravely ill patients in need of forced medication. Mental health professionals are to be encouraged to treat patients without fears of legal entrapment or reprisal. We must make known our concerns for our patients and seek the enactment of more humane and responsible mental health laws. There is a need to mount a public education campaign to overturn irrational laws that punish the mentally ill under the guise of protecting their rights. The North Carolina Legislature, perhaps through the Mental Health Study Commission, should be encouraged to re-examine all available data on the impact of our mental health laws on patients, their families and communities over the past several years. These suggestions are compatible with our ethical responsibilities as physicians and I am convinced we must do everything within our power to promote the best interest of mentally ill patients.

JAMES H. CARTER, M.D.
Associate Professor of Psychiatry
Division of Community and Social Psychiatry
Duke University Medical Center
Durham, N.C. 27710

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On Privacy — Telephones and Polygraphy

When Alexander Graham Bell invented the telephone, he must have been extremely gratified. Technologically the feat could only be admired and socially and commercially the possibilities were startling. But who could have anticipated our 1-800 friends on television, eagerly awaiting us with operators standing by to take our orders for all sorts of merchandise not available in stores? Who for that matter would have anticipated television? Now that the Bell System, a truly remarkable organization living off its outstanding research, is being broken up, some of the medical implications of the telephone and of instant communication in general deserve examination.

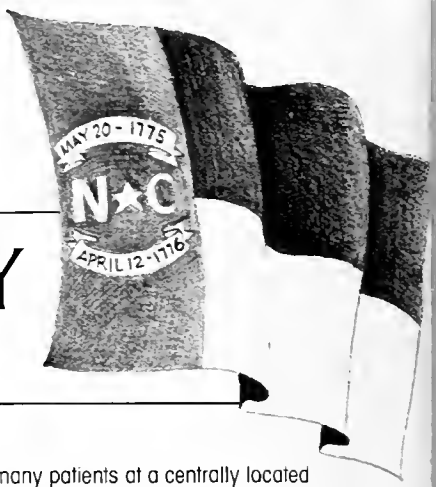
The telephone has indeed added another dimension, maybe several, to medical practice so that the patient can find the doctor much more easily, even stumbling through the yellow pages, and the doctor can find the patient or the pharmacist. The telephone perhaps more than any other single factor accelerated the decline of the house call because the worried well can often be reassured, and more frequently, particularly if their histories are known, quite satisfactorily by the disembodied voice. And the telephone as handmaiden to commercial expansion converted time to money — no more reliance on the horse to know the way home from the long labor case and no more need to rely on the mails for advice.

The other side begs attention though. The rude awakenings from needed sleep by the senseless caller or the wrong number, the sudden bosom buddy peddling oil rights or diamonds or resort properties who always calls at mealtime, the phonathons of colleges, candidates and philanthropies. Little wonder the broker extols the "chatter" stocks. Too much talk does tend to drive out sensible conversation and good writing and most of us do not react to the ring as did Pavlov's dog to the bell. Rather a vague resentment of the insistent intruder, of noise — sound without value — as generated by hundreds of ambitious salesmen. Maybe our adaptability to the modern world, our only one after all, is best measured by how we handle our interruptions by phone, beeper, junk mail and portable radios.

And there is more ahead because governments, business, behavioral scientists, pollsters, anthropologists, newspaper columnists, politicians want to know how we react to everything so they can vary their pitches accordingly. Congress is concerned about computer technology. What should public policy be? Who is entitled to gain and store all those data about us? Is an electronically produced profile the real me? Really we collectively are struggling to define the zone that separates private from public behavior, a task which requires distinguishing between the two first. This obviously spills over into the hospital record room where the confidentiality of the doctor-patient relationship is more memory than fact.[1]

The Pentagon, as Art Buchwald[2] has recently re-

Roche salutes
the history of North Carolina medicine



THE 18-HOUR-A-DAY DOCTOR

Dr. Gaine Cannon

A modern-day version of the country doctor on horseback, Dr. Gaine Cannon covered his scattered practice around the Blue Ridge Mountain country near Balsam Grove, North Carolina, in a four-wheel-drive Jeep wagon.[1]

On an average working day, Dr. Cannon rose at sunup to see patients at his converted-farmhouse clinic before setting out to make his usual 15 to 20 house calls around the countryside. Generally, after treating his primary patient, he saw each member of the family, as well—his personal effort at preventive medicine.

Multiple services

With the nearest hospital some 60 miles away and no pharmacy closer than an hour-and-a-half drive, Dr. Cannon filled his own prescriptions, delivered babies and treated many patients at a centrally located general store with the most modern techniques and medications. After a day on the road—usually within a 50-mile radius—Dr. Cannon's office hours would begin at 5:30 p.m. and stretch on until the last patient was attended to. His record-keeping sessions routinely filled the hour before midnight—rounding off Dr. Cannon's 18-hour day.

At all hours

But emergencies often interrupted his sleep. Dr. Cannon claimed his real office hours were 24 hours a day, and his patients revered him for it.

Dr. Cannon died in 1966 at the age of 68. He will be long remembered—most especially by the more than 5000 North Carolinians he helped bring into the world, some of them at the side of a rutted country road.

Reference: 1. Doctor in the backwoods. In Lee RV, Ermerl S *et al*. *The Physician*. New York, Life Science Library, Time Inc., 1967, pp 38-50

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In two multicenter studies, only 1.9% of Limbitrol patients experienced cardiovascular side effects.[3]

Patients should be cautioned about the combined effects with alcohol or other CNS depressants and about activities requiring complete mental alertness such as operating machinery or driving a car.

References: 1. Rickels K Drug treatment of anxiety, in *Psychopharmacology in the Practice of Medicine*, edited by Jarvik ME, New York, Appleton-Century-Crofts, 1977, p 316 **2.** Feighner JP *et al Psychopharmacology 61* 217-229, Mar 1979. **3.** Data on file, Hoffmann-La Roche Inc., Nutley, NJ

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minded us, is an overwhelming presence in this zone, perhaps a threat, certainly not always a friend. The Pentagon is apparently thinking about using lie detectors to be sure its many employees are truthful in thought, word and deed. As if the secret can be kept! But there is something about lie detection that suggests secret knowledge, mysterious means to ferret out evil thoughts hidden deep in the cellars of our souls. By recording and measuring, the polygraph supposedly can objectify truth even when we ourselves are in doubt. But there are variables — genetic, use of drugs, extent of fatigue, presence of disease, reaction to the questioner, circadian rhythm — which hardly portend accuracy or verifiability.[3]

Yet when we read that someone refuses to take a lie detector test, many of us at first think the decliner guilty. Of course we are not obliged to incriminate ourselves but there is temptation to trust the machine as judge and juror. At times we ourselves play the role of lie detectors: He (or she) could not look me straight in the eye, a blush or a flush signifies a guilty conscience, a Freudian slip is a confession from the superego. Body language does tell us something and graphic representation is essential in accumulating and accurately assessing data as we test hypotheses. We have come a long way from the kymograph with its smoked paper it is true but we have not learned the dimension of truth nor reduced it to curve or formula and may not expect to do so for an eon or so.

J.H.F.

References

1. Siegler M. Confidentiality in medicine — a decrepit concept. N Engl J Med 1982;307:1518-1521.
2. Winston-Salem Journal, Dec. 8, 1982.
3. Ward W.M., Orne M.T. The physiological detection of deception. Am Sci 1982;70:402-409

HONEY

"So you for others, bees, store up your honey."

—Virgil

Last year the place of milk in modern society, its role in nutrition and its impact on politics were considered in this *Journal*.[1] Now it is time to examine that other occupant of the land of milk and honey to see whether similar illusions, political and scientific, dog the product of Apis mellifera, the honey bee.

Of course they do. We are storing up surplus honey, just as we store surplus dairy products, through the grace of benevolent government but the poor have yet to receive a bounty from those storehouses. In 1982 our government purchased from over 60,000 beekeepers 37 million pounds of surplus honey, about $20 million worth amounting to about 20% of the year's output.[2] Since the support price exceeds the market price, what is to be done? The beekeeper lobby wants import restriction, price supports and high prices. Yet how can consumption increase in the face of high prices and our tax monies be retrieved from subsidies for other uses?

The bee lived socially on this earth long before man came to subsidize its keepers and has peacefully submitted to living in man-made hives for millennia, long being a major source of sugar. Now beet and cane sugar have triumphed in the marketplace but the bee continues to store its honey. About 20 years ago it seemed that a solution to the problem might be at hand. Dr. D. C. Jarvis, that redoubtable Vermonter, then assured us that regular use of apple cider vinegar and honey would prolong our lives and make our old age as truly golden as honey itself. The sugar of the honey was purportedly natural and perforce ineffably superior to any other sweetener.[3] Indeed to substitution of honey straight from the hive for manufactured sugar might be attributed our lapse from Eden. So the busy bee became a producer for the natural food folks who did not hesitate to exact a price for such a dear commodity.

Perhaps the role of the bee as a helper in healing should not be made such sport of. For honey is really an effective medicine when used appropriately. But our colleagues in alternative medicine are unselective and see no need to verify their hypotheses. To them assertions seem sufficient and doubts to be decried. The efficacy of honey as medicine was recognized long before them and confirmed by the ancient Egyptians, at least 5,000 years ago. Honey exerts an antibiotic action producing an enzyme which liberates H_2O_2 — hydrogen perioxide, and propolis, which bees use to patch their hives, is antibiotic also. The standard wound dressing in Egypt was of lint and a salve, one-third honey and two-thirds fat, which in the laboratory turns out to be just right to inhibit bacterial growth. Thus bees not only protect themselves from infection but their followers on earth: man.[4]

Apple cider vinegar, acetic acid, is antibiotic too; when used locally it is quite active against Pseudomonas. So the medicinal effects of vinegar and honey are achieved by external, not internal, application. Indications for internal use are entirely gustatory; honey for those who simply like it and vinegar on occasion to improve the taste of turnip greens.

J.H.F.

References

1. Felts JH. Milk. NC Med J 1982;43:849-852
2. Wall Street Journal. Sept. 20, 1982
3. Law DA. A guide to alternative medicine. Garden City, New York: Doubleday & Company, Inc., 1976:50-52.
4. Majno G. The healing hand. Cambridge, Massachusetts: Harvard University Press 1975:112-120

Bulletin Board

What? When? Where?

Please note: 1. The Continuing Medical Education Programs at Bowman Gray, Duke, East Carolina and UNC Schools of Medicine, Dorothea Dix, and Burroughs Wellcome Company are accredited by the American Medical Association. Therefore CME programs sponsored or cosponsored by these schools automatically qualify for AMA Category 1 credit toward the AMA's Physician Recognition Award, and for North Carolina Medical Society Category A credit. Where AAFP credit has been obtained, this also is indicated.

IN STATE

March 9-12

"Internal Medicine 1983"
Place: Chapel Hill
Fee: $175
Info: W. B. Wood, M.D., Director CME, 231 MacNider 202H, UNC School of Medicine, Chapel Hill, NC 27514, 919/962-2118

March 12

"Fundamentals of Hazardous Waste Materials"
Place: Winston-Salem
Fee: $40
Credit: 5 hours, AMA Category 1
Info: Emery C. Miller, M.D., Bowman Gray School of Medicine, Winston-Salem, NC 27103, 919/748-4450

March 16

"Hyperalimentation"
Place: Sanford
Credit: 3.5 hours AMA Category I
Info: Robert S. Cline, M.D., Central Carolina Hospital, Sanford, NC 27330 919/774-4100, ext. 394

March 18-19

"Live from Duke - Pediatrics 1983"
Place: Durham
Fee: $115
Credit: 11.5 hours AMA
Info: Cindi Easterling, Office of Continuing Education, Duke University Medical Center, Durham, NC 27710 919/684-6485

March 24-25

"Seventh Annual Cancer Research Symposium: The Development of Target-Oriented Anticancer Drugs"
Place: Chapel Hill
Info: W. B. Wood, M.D., Director CME, 231 MacNider 202H, UNC School of Medicine, Chapel Hill, NC 27514, 919/962-2118

March 24-26

"Gynecologic Surgery"
Place: Wrightsville Beach
Fee: $175
Info: W. B. Wood, M.D., Director CME, 231 MacNider 202H, UNC School of Medicine, Chapel Hill, NC 27514, 919/962-2118

March 24-27

"Eighth Annual Update in Diagnostic Imaging"
Place: Winston-Salem
Fee: $250
Credit: 25 hours, AMA Category 1
Info: Emery C. Miller, M.D., Bowman Gray School of Medicine, Winston-Salem, NC 27103, 919/748-4450

March 27-30

"Administrative Shells: Faculty as Managers"
Place: Rougemont
Credit: 20 hours
Info: Katharine Munning, Ph.D., Duke-Watts Family Medicine Program, 407 Crutchfield Street, Durham, NC 27704, 919/471-2571

April 8-9

"Frank R. Lock Symposium in Obstetrics and Gynecology"
Place: Winston-Salem
Fee: $150
Credit: 9 hours, AMA Category 1
Info: Emery C. Miller, Bowman Gray School of Medicine, Winston-Salem, NC 27103, 919/748-4450

April 8-9

"Carolina Ocutome Workshop"
Place: Chapel Hill
Fee: $500
Info: W. B. Wood, M.D., Director CME, 231 MacNider 202H, UNC School of Medicine, Chapel Hill, NC 27514, 919/962-2118

April 11-12

"2nd Annual Spring Symposium in Ob/Gyn"
Place: Durham
Fee: $250
Credit: 12 hours AMA, ACOG
Info: Cindi Easterling, Office of Continuing Medical Education, Duke University Medical Center, Durham, NC 27710 919/684-6485

Instruments courtesy of the Country Doctor Museum, Bailey, N.C.

Speculum ~ Early 19th Century

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"Recent Knowledge and Practical Pointers in Office Rheumatology"
Place: Greenville
Fee: $50
Info: Edwin W. Monroe, M.D., P.O. Box 7224, Greenville, NC 27834, 919/758-5200

April 13
"Human Sexuality and Related Subjects"
Place: Wilson
Info: Wilson Memorial Hospital, Wilson, NC

April 14-17
"International Single Fiber EMG Course and Symposium"
Place: Durham
Credit: 28 hours
Info: Donald B. Sanders, M.D., Duke University Medical Center, Box 3403, Durham, NC 27710, 919/684-6078

April 16-17
"Anesthetic Problems"
Place: Chapel Hill
Fee: $125
Credit: 9.5 hours AMA
Info: W. B. Wood, M.D., CME Office, 231 MacNider 202H, Chapel Hill, NC 27514 919/962-2118

April 17-20
"Workshop on Beyond Advanced Clinical Teaching: Small Groups & Lectures"
Place: Rougemont
Credit: 20 hours
Info: Katharine Munning, Ph.D., Duke-Watts Family Medicine Program, 407 Crutchfield Street, Durham, NC 27704, 919/471-2571

April 20
"Diabetes Update 1983"
Place: Greensboro
Fee: $35 physicians; $25 non-physicians
Credit: 5 hours AMA
Info: W. B. Wood, M.D., Director CME, 231 MacNider 202H, UNC School of Medicine, Chapel Hill, NC 27514, 919/962-2118

April 20
"Medical Records and Documentation, Legal Aspects"
Place: Sanford
Credit: 2 hours AMA
Info: Robert S. Cline, M.D., Central Carolina Hospital, Sanford, NC 27330, 919/774-4110, ext. 394

April 21
"C.T. Scanning of the Body"
Place: New Bern
Info: William B. Hunt, Jr., M.D., P.O. Box 2157, New Bern, NC 28560, 919/633-8620

April 22-23
"Pediatric Postgraduate Course"
Place: Winston-Salem
Fee: $80
Credit: 9 hours, AMA Category 1
Info: Emery C. Miller, M.D., Bowman Gray School of Medicine, Winston-Salem, NC 27103, 919/748-4450

April 23
"Biomedical Consequences of Nuclear Weapons and Nuclear War"
Place: Chapel Hill
Fee: $60
Info: W. B. Wood, M.D., Director CME, 231 MacNider 202H, UNC School of Medicine, Chapel Hill, NC 27514, 919/962-2118

April 23-24
"Perinatology and Ultrasound"
Place: Chapel Hill
Fee: $200
Info: W. B. Wood, M.D., Director CME, 231 MacNider 202H, UNC School of Medicine, Chapel Hill, NC 27514, 919/962-2118

May 11-12
"Breath of Spring, '83"
Place: Winston-Salem
Fee: $100
Credit: 10 hours AMA
Info: Emery C. Miller, M.D., Bowman Gray School of Medicine, Winston-Salem, NC 27103 919/748-4450

May 13
"Recent Advances in the Diagnosis and Treatment of Pediatric Pulmonary Infection"
Place: Durham
Fee: $60
Credit: 12 hours
Info: Alexander Spock, M.D., Box 2994 Duke University Medical Center, Durham, NC 27710 919/681-3364

May 18
"Hypertensive Vascular Disease"
Place: Sanford
Credit: 3.5 hours AMA
Info: Robert S. Cline, M.D., Central Carolina Hospital, Sanford, NC 27330 919/774-4100, ext. 394

May 20
"Pediatrics Day 1983"
Place: Greenville
Fee: $50
Credit: 6 hours AMA
Info: Edwin W. Monroe, M.D., P.O. Box 7224, Greenville, NC 27834 919/758-5200

May 20-21
"17th Annual Duke McPherson Otolaryngology Symposium"
Place: Durham
Info: Joseph C. Farmer, M.D., Box 3805 Duke University Medical Center, Durham, NC 27710 919/684-5238

May 21
"3rd Annual Teaching Skills Workshop for Family Medicine"
Info: George Parkerson, M.D., Box 3886 Duke University Medical Center, Durham, NC 27710 919/471-2571

May 25-28
"Geriatrics Symposium"
Place: Sea Level, NC
Info: Harvey Jay Cohen, M.D., Box 3003 Duke University Medical Center, Durham, NC 27710 919/684-3176

May 26-28
"Cardiology Update for Family Physicians"
Place: Boone
Credit: 16 hours AAFP
Info: North Carolina Academy of Family Physicians, P.O. Box 20146, Raleigh, NC 27619 919/781-6467

June 2-3
"Orgain Cardiology Symposium"
Info: Galen S. Wagner, M.D., Box 32112 Duke University Medical Center, Durham, NC 27710 919/681-2255

June 7
"Duke Tuesday"
Place: Durham
Credit: 5 hours
Info: Linda Mace, Division of Urology, Box 3707 Duke University Medical Center, Durham, NC 27710 919/684-2033

June 9-11
"Exercise: Science and Practice"
Place: Chapel Hill
Fee: $90
Credit: 16 hours AMA
Info: Donna Bernhardt, M.S., L.P.T., Department of Allied Health Professions, Medical School Wing C-221H, Chapel Hill, NC 27514 919/966-5005

June 12-15
"Behavioral Aspects of Family Medicine"
Place: Rougemont
Credit: 20 hours
Info: Katharine Munning, Ph.D., Duke-Watts Family Medicine Program, 407 Crutchfield Street, Durham, NC 27704 919/471-2571

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June 16-17
"Duke/Watts Family Medicine Symposium"
Info: Samuel Warburton, M.D., 407 Crutchfield Street, Durham, NC 27704 919/471-2571

June 22
"Asthma and IPPB, Spirometry"
Place: Sanford
Credit: 3.5 hours AMA
Info: Robert S. Cline, M.D., Central Carolina Hospital, Sanford, NC 27330 919/774-4100, ext. 394

Out of State

March 20-24
"32nd Annual Scientific Session of the American College of Cardiology"
Place: New Orleans, Louisiana
Info: American College of Cardiology, 9111 Old Georgetown Road, Bethesda, Md. 20814, 301/897-5400

April 11-13
"Gold Coast Seminar: Medicine"
Place: West Palm Beach, Florida
Credit: 8 hours
Info: Cindi Easterling, Office of Continuing Medical Education, Duke University Medical Center, Box 3306, Durham, NC 27710, 919/684-6485

April 18-29
(Application deadline February 2)
"Clinical Cytopathology for Pathologists"
Place: Baltimore
Credit: 125 hours
Info: John K. Frost, M.D., 110 Pathology Building, The Johns Hopkins Hospital, Baltimore, Md. 21205

May 1-5
"Duke University Trauma Conference"
Place: Myrtle Beach, SC
Credit: 21 hours, AMA, ACEP
Info: Rita Weber, R.N., Box 3869 Duke University Medical Center, Durham, NC 27710 919/684-2237

May 2-4
"Gold Coast Seminar: OB/GYN"
Place: West Palm Beach, Florida
Credit: 20 hours
Info: Cindi Easterling, Office of Continuing Medical Education, Duke University Medical Center, Box 3306, Durham, NC 27710, 919/684-6485

May 4-7
"64th Annual Meeting, The Virginia Society of Ophthalmology and Otolaryngology, Inc."
Place: Charlottesville, VA
Info: Donna Strawderman, 4205 Dover Road, Richmond, VA 23221 804/353-2721

May 13-15
"Abdominal Imaging"
Place: Hilton Head Island, SC
Fee: $300 ($200 residents and fellows)
Credit: 20 hours
Info: W. B. Wood, M.D., 231 MacNider 202H, Chapel Hill, NC 27514 919/962-2118

The items listed in this column cover the three months immediately following publication. Requests for listing should be mailed to Patricia Hodgson, Managing Editor, *North Carolina Medical Journal*, P.O. Box 3910, Duke University Medical Center, Durham, NC 27710 two months before they are scheduled to appear in the *Journal*.

North Carolina Medical Society Auxiliary

DUAL DOCTOR FAMILIES

Recent data indicate that 30% of entering medical students are female. If past trends continue, 65% to 70% will marry male physicians. The number of dual doctor families will continue to increase as years go by. To address the concerns of the dual doctor family, a new organization has been formed by Drs. Esther and David Nash, both second year residents in internal medicine at the Graduate Hospital in Philadelphia, Pa.

The purpose of Dual Doctor Families is to gather data on M.D. couples, to share information, and to develop a support and social network. The first issue of a newsletter and an annotated bibliography on dual physician families has been published.

John-Henry Pfifferling, Ph.D., founder of the Center for the Well-Being of Health Professionals in Durham, N.C., welcomes Dual Doctor Families as ". . . another ally in the promotion of the medical families' well being." Dr. Pfifferling says, "Health care professionals are compassionate and conscientious, but their work often drains them of emotional energy. . . . With two physicians in one family unit, the stresses can be doubled."

Dual Doctor Families has more than 1,300 members from the United States, Canada, and Australia. Dual physician families and dual medical student families interested in the organization can write Drs. David and Esther Nash at the Graduate Hospital, One Graduate Plaza, Philadelphia, Pa. 19146.

Anita D. Taylor, Winston-Salem, N.C.

News Notes

Duke University Medical Center

A new tissue-typing technique is significantly increasing the survival rates of cornea transplants in certain people.

"A method of tissue-typing the donor cornea and matching it to the recipient has significantly increased the transplant survival rate in high-risk patients," said Dr. Gary Foulks, assistant professor of ophthalmology. High risk patients are those who have blood vessels in the cornea due to disease or who have previously rejected cornea transplants.

"We have reduced the cornea rejection rate from 60 percent to 70 percent down to 20 percent to 25 percent in this group," Foulks said.

Approximately 20 percent of the cornea transplant patients seen at the Duke Eye Center are high-risk patients and may benefit from the new matching procedure.

The Duke study was reported in the *American Journal of Ophthalmology*. Others involved in the study were Dr. Fred Sanfilippo, Dr. Joseph LoCascio, Dr. Deborah Dawson and Marilyn McQueen.

Foulks said it is difficult to find cornea donors. "The high-risk patients often have to wait from two months to two years for corneas," he said. "More donors are needed to match these people at high risk."

The medical center has been chosen, along with UCLA and the Mayo Clinic, for clinical trials of a new device that allows neurosurgeons to remove deep-seated brain tumors that were formerly inoperable.

Duke neurosurgeons Dr. Dennis Bullard and Dr. Blaine Nashold are optimistic about the effectiveness of the device, called the Shelden Stereotactic System.

The system was developed by Dr. Hunter Shelden and Skip Jacques at the Huntington Medical Research Institute in Pasadena, Calif.

It consists of a frame that fits around the patient's head and is plugged into a computerized axial tomography (CAT) scanner. The CAT scanner gives doctors a picture of the tumor and allows them to calculate precisely the path for a surgical probe mounted on the frame.

A small incision is made and a plastic tube inserted for a direct line of sight to the tumor. The surgeons can then remove it using microsurgery or a laser.

By former standards the tumors were surgically inaccessible because it would have caused too much damage to the brain to reach them.

Research findings indicate that, in some instances, artificial blood may be more effective at transporting oxygen than the plasma solutions often used for routine transfusions.

The laboratory studies were performed by Dr. Avis L. Sylvia, assistant medical research professor of physiology. The studies revealed that artificial blood fluid more effectively carried oxygen to the brain than did plasma when a high oxygen mixture was administered.

Artificial blood is becoming important for cases in which human blood is not available or cannot be transfused for religious reasons, Sylvia said.

Other potential uses might be in stroke victims, heart attack patients, anemic patients or trauma victims who have lost a lot of blood.

The study was published in the *Journal of Trauma*. Others involved in the research were Dr. Frans Jöbsis of the Department of Physiology at Duke and Dr. J. J. Proctor and M. M. Goldsmith of the Department of Surgery, University of North Carolina School of Medicine.

Dr. Bernard James Carroll has been named chairman of the Department of Psychiatry, effective April 1, according to chancellor and acting provost Dr. H. Keith Brodie.

Carroll, 42, comes to Duke from the University of Michigan, where he was acting department chairman. He also served as director of the clinical studies unit, associate director of the Mental Health Research Institute and chief of service for adult psychiatry.

Born in Sydney, Australia, Carroll was an undergraduate and medical student at the University of Melbourne, where he took bachelor of science, medicine and surgery degrees before entering psychiatry. He received his diploma in psychological medicine in 1969 and his PhD in clinical psychobiology two years later.

Carroll is vice president of the Society of Biological Psychiatry, president of the Psychiatric Research Society and a councillor of the American Psychosomatic Society and the Collegium Internationale Neuro-Psychopharmacologicum.

Cataract surgery requires much less time in the hospital than it once did, says an ophthalmologist at the Duke Eye Center.

Some patients can even come for surgery in the morning and leave in the afternoon, said Dr. W. Banks Anderson, if they agree to come back the next day for a follow-up examination.

Not all cataracts have to be removed, he said, but there are an estimated 300,000 to 400,000 cataract operations performed each year in this country.

Most cataracts are a natural occurrence, Anderson said. A cataract is a hazing or clouding of the lens of the eye as the proteins that make up the lens become thickened and disorganized.

There are two methods for removing a cataract or clouded lens, he added. One is to remove the lens

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within its capsule, a thin sack-like membrane that holds it in place. Another method is to remove the clouded lens only, leaving part of the membrane capsule in place. The latter method is used if an intraocular lens is implanted so that the membrane can help hold the artificial lens in position.

The development of the intraocular lens implant was an important advance in cataract surgery, Anderson said. "We began using them at the Duke Eye Center in 1977." However, Anderson said not every cataract patient should have an intraocular lens implant. For many people, cataract spectacles or contact lenses are a better way to correct vision after surgery.

There are many different kinds of contact lenses available for cataract patients, he said, including some that can be worn for days or weeks at a time.

The decision is one that must be made jointly by the physician and the patient and may depend on a number of factors, he added, such as the patient's medical history, age and lifestyle.

The Bowman Gray School of Medicine Wake Forest University

The Bowman Gray School of Medicine's principal teaching hospital, North Carolina Baptist Hospital, has begun a computer-based information system in its radiology department which promises better service to physicians and significant savings.

The $250,000 system had been needed to efficiently manage the vast amount of information generated in the department each day.

At one time, it took four days from the time an X-ray was taken until the typed report on that X-ray was placed on the patient's chart. The radiology department set out to reduce that time so that a preliminary report on an X-ray would be available within 12 hours and a final report would be on the patient's chart within 24 hours.

To accomplish that goal, the department's new system permits a radiologist's dictated report on an X-ray to be typed directly into a computer. The radiologist can add to or correct that preliminary report on any one of 25 computer terminals throughout the department. Only after the preliminary report is corrected is the final report typed by the computer, which also puts corrected pages together and sorts the reports by patient floor.

A major aim of that part of the system was to ensure that referring physicians have much faster access to both the preliminary and final reports.

Another portion of the information system involves the department assigning bar codes to everything in the department from patients to X-ray films. Bar codes are very similar to the sets of block lines seen on packages in a grocery store.

The bar code system already is credited with making jobs easier for people in the department. It is expected to aid in accounting, billing, X-ray film inventory, studies of room and machine utilization and studies of employee productivity. And with the bar codes, even common diagnoses can be coded directly into the computer, bypassing the usual dictation of a report and shortening by as much as eight hours the time needed for getting a diagnosis to a referring physician.

And the entire information system is expected to save the hospital as much as $75,000 each year.

Dr. M. Robert Cooper, professor of medicine, has been appointed chairman of the Public Education Committee of the North Carolina Division of the American Cancer Society.

Dr. Julian F. Keith Jr., professor and chairman of the Department of Family and Community Medicine, has been elected chairman of the Board of Directors of the Winston-Salem Industries for the Blind. He also has been re-elected president of the Board of Directors of the Child Guidance Clinic of Forsyth County, Inc.

Dr. David L. Kelly Jr., professor of surgery (neurosurgery), has been appointed to the Executive Committee of the Congress of Neurological Surgeons.

Dr. Robert B. Taylor, professor of family medicine, has been elected to the Board of Directors of the North Carolina Academy of Family Physicians.

Dr. Duke B. Weeks, associate professor of anesthesia, has been invited into the membership of the Diagnostic and Therapeutic Technology Assessment (DATTA) Reference Panel on behalf of the Council on Scientific Affairs of the American Medical Association.

University of N.C. School of Medicine
N.C. Memorial Hospital

When a person is badly burned, scar tissue is inevitable. But proper care during the time when scars are forming can mean the difference between grotesque disfigurement and a smooth and soft covering for the body.

It also can ensure that patients are able to regain motion in all parts of their body so they can continue to do the activities they enjoyed before they were burned.

Occupational therapists at the North Carolina Jaycee Burn Center in Chapel Hill fit patients with a special type of pressure garment designed to protect their skin and promote even healing. The garments, called Jobskin elastic pressure covers, are similar to heavy support stockings and can be made to cover a person's entire body.

Patients at the burn center are measured for their Jobskin garments after their wounds have healed and shortly before they are ready to go home. Each garment is custom fitted to cover the patient's arms, legs, face, chest, or whatever areas have been burned.

Burn patients normally wear Jobskin garments 23 hours a day for 12 to 18 months after they leave the burn center, according to Judee Gillooly, head of the burn center occupational therapy department at North Carolina Memorial Hospital.

"It's very important that patients understand that after their skin has healed it may look very flat, but it may not stay that way," Gillooly said. "We have to guard against scars, not only on the areas where the person was burned, but also on areas where skin was removed for skin grafts. Sometimes the donor areas can scar just as easily as the areas that have been burned."

Gillooly said it is essential that burn victims wear the garments at all times except when bathing to prevent the development of scars that not only would be unattractive, but could cripple them by preventing them from being able to move their joints.

The stakes are high. Although a burn patient's skin may never look exactly like it once did, Gillooly said, patients who faithfully wear their pressure garments have much less scarring, a better physical appearance and generally feel much better about themselves.

People helping people is a good way to describe a new Infant Monitoring Program at North Carolina Memorial Hospital which already is helping to save the lives of children around the Tar Heel state.

"Sudden Infant Death Syndrome (SIDS) or crib death occurs when an apparently normal infant dies suddenly and unexpectedly usually during sleep," said Dr. Marianna Henry, pediatric pulmonary fellow at N.C. Memorial. "There is no known cause for the disorder which is responsible for one-third of the deaths of children between the age of one week and one year."

"Some infants are felt to be at a greater risk for crib death than others," Henry said. Infants who are brothers or sisters of a SIDS victim, for example, may be at slightly increased risk and may be candidates for a home monitoring program. Following a period of evaluation in the hospital, most of these infants are considered candidates for a home monitoring program.

Since the families who use the monitors needed to know how to operate the device, there was a feeling among hospital staff that some type of educational program was needed, said Polly Johnson, pediatric nurse clinician.

"What the home monitoring program does is to teach the parents how to operate the equipment," said Johnson. "Since the monitors trigger an alarm when the infant's heart or respiratory rate falls below a normal level, we teach them what to do if the alarm should go off."

Approximately 12 to 15 babies currently are participating in the monitoring program which is headed by Dr. Gerald Strope, assistant professor of pediatrics at the University of North Carolina at Chapel Hill School of Medicine.

Medical researchers at the University of North Carolina at Chapel Hill have identified a possible cause for the brain failure which often accompanies the neurological disease called Reye's Syndrome.

Their work suggests that a defect in the body's metabolism causes an accumulation of fat in the patient's blood plasma and may be among the major culprits in causing the brain to swell.

Reye's Syndrome is a disorder characterized by the sudden onset of brain swelling and liver failure in a child who earlier had a simple viral disorder.

Dr. Locan A. O'Tuama, professor of neurology and a research scientist at the Biological Sciences Research Center, explained that the liver problems associated with the syndrome are easily treated, but the brain involvement is unpredictable and can lead to death in 10 to 15 percent of the cases. Children who recover from Reye's Syndrome can be left severely retarded or have behavior and learning difficulties as a result of the brain swelling.

O'Tuama said certain metabolites appear to accumulate in the plasma of a patient with Reye's Syndrome. Ordinarily the body can excrete these abnormal acids through the blood stream, he said.

"The brain, however, does not have an active way

for excreting these compounds," O'Tuama said, "and in fact, contains a large amount of fat and produces these compounds itself." He said this may be why the brain involvement in Reye's Syndrome lasts so long and why the outcome is so uncertain.

O'Tuama said the incidence of the syndrome has decreased in recent years but the research also may be relevant to other disorders that affect the brains of young children.

The UNC-CH research is supported by a grant from the National Reye's Syndrome Foundation. Other faculty members involved include Dr. J. Douglas Mann, associate professor of neurology and medicine; Chung S. Kim, research scientist at the Biological Sciences Research Center; and Dr. Charles Roe, professor of pediatrics at Duke University.

Dr. Colin G. Thomas Jr., is the first recipient of the Mr. and Mrs. Sanford Doxey Jr. Distinguished Professorship in the School of Medicine.

Thomas is professor and chair of surgery. His appointment to the Doxey Professorship was made by the UNC-CH Board of Trustees and announced by University Chancellor Christopher C. Fordham III.

The Doxey professorship was established recently by Sanford Doxey Jr., founder and president of the Doxey Furniture Corporation of Fayetteville, and his wife.

Thomas was appointed to the UNC-CH faculty in 1952, joining the surgery department in the newly created four-year medical school. By 1961, he reached the rank of professor and was appointed department chair in 1966.

A native of Iowa, he received his B.S. and M.D. degrees from the University of Chicago in 1940 and 1943 respectively. His alma mater honored him earlier this year with its Distinguished Service Award.

The psychiatry library at N.C. Memorial Hospital is the home of a very exclusive medical resource.

It houses a file of cancer information, compiled recently by Dr. Cheryl McCartney, Dr. Dwight Evans, assistant professor of psychiatry, and librarian Bill Richardson. "There is nothing else in existence like it," Richardson said of the file containing 380 articles on the psychological aspects of cancer. "We've selected 23 topic headings and since February of last year, the three of us have screened a couple of hundred articles and selected the best ones."

Categories include the psychological response to diagnoses and disease, cancer pain, death and dying, sexual issues in cancer, breast cancer, support groups for cancer patients, psychosomatic theories and cancer surgery.

Most commercially available toys are unsuitable for handicapped children because they require a level of coordination which most of them simply do not have. To remedy this situation Dr. Joseph T. Cohn is busy in his own workshop designing devices that will make these same toys suitable for children with developmental or physical handicaps. Using a self-designed instant toy adaptor, Cohn can change almost any battery-operated toy into a play thing which can be operated by children with little or no control over their movements.

Cohn works with a team of specialists at the Division for Disorders of Development and Learning (DDDL) at the University of North Carolina School of Medicine who evaluate children with handicaps and make recommendations concerning the best way to make maximum use of their abilities.

The adapted toys are an important part of the diagnostic process and can be used to get physical and mental responses from children who may not otherwise be able to respond to traditional testing, according to Shelly Stowers, an occupational therapist who is a member of DDDL's augmentative communication team.

The child is introduced to a toy which can be turned off or on with a small amount of pressure on a special switch. DDDL team members work together to find a

movement that the child can do easily, over and over again. Cohn helps equip the child with a switch that can be activated using this movement, whether it be a hand or leg movement, pressure with the head on the side of a wheelchair, or simply raising the eyebrows.

"The toys help us find out what the best movement is," explained Stowers, "because with the toy in front of the child, he or she has a reason to move. It's very important for us to find out if children have enough intelligence to know that they are turning on the toy if they touch the switch.

"Once we have completed our evaluation," she continued, "we are in an excellent position to make recommendations about alternative communication systems for the child who cannot speak.

"Many people have a hard time understanding how hitting a switch to make a toy go has anything to do with communication," Stowers said. But she added that once a child has shown that he or she understands this cause and effect relationship, team members at DDDL can begin working on a simple electronic communication system that will suit the child's needs and abilities.

East Carolina University School of Medicine

Students at the East Carolina University School of Medicine are studying from a newly-published textbook written by one of their instructors, Dr. Wilhelm R. Frisell, professor and chairman of the biochemistry department.

The 845-page book, *Human Biochemistry*, was published by Macmillan Publishing Co., Inc. It is based almost entirely on the content of lectures given or attended by Dr. Frisell during 35 years of teaching at four medical schools.

Frisell is a native of Two Harbors, Minn., and received his B.A. degree from St. Olaf College and M.A. and Ph.D. degrees from The Johns Hopkins University.

He taught students in The Johns Hopkins University School of Medicine, University of Colorado School of Medicine and the College of Medicine and Dentistry of New Jersey before joining the ECU faculty in 1976.

Three new faculty members have been announced at the School of Medicine.

Dr. Edward L. Treadwell has joined the Department of Medicine as assistant professor and section head of rheumatology. Treadwell received his undergraduate degree from North Carolina Agricultural and Technical University in Greensboro and his medical degree from Duke University. He completed his residency training at Southern Illinois School of Medicine in Springfield, Ill. Prior to his appointment, he was a

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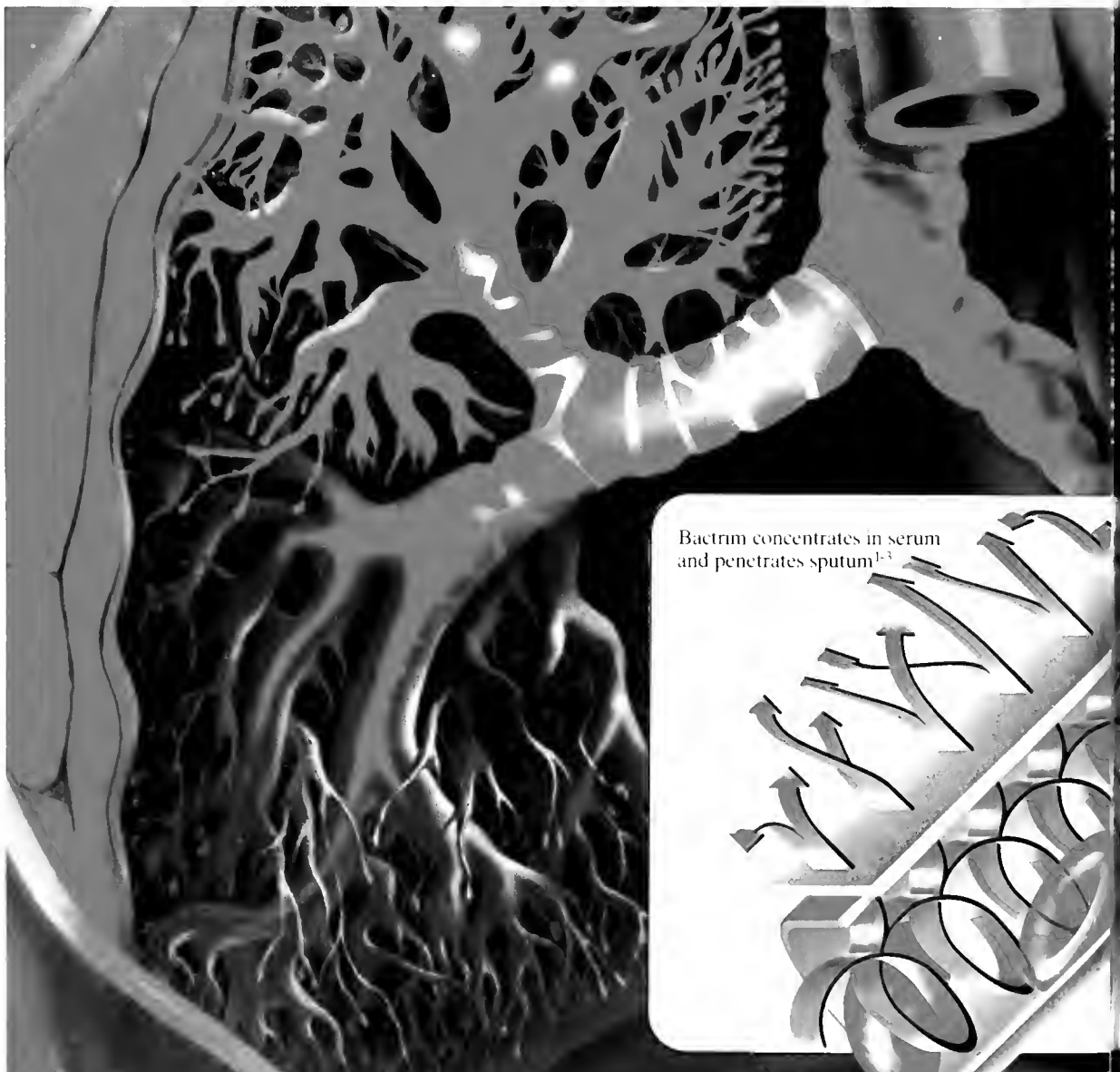

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najor pathogens
f chronic bronchitis*

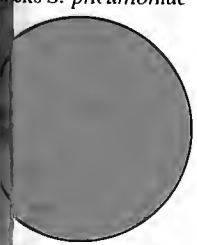
Bactrim clears sputum of susceptible bacteria

In sputum cultures from patients with acute exacerbations of chronic bronchitis, *H. influenzae* and *S. pneumoniae* are isolated more often than any other pathogens.[4,5] One study of transtracheal aspirates from 76 patients with acute exacerbations found that 80% of the isolates were of these two pathogens.[5]

Bactrim is effective *in vitro* against most strains of both *S. pneumoniae* and *H. influenzae*—even ampicillin-resistant strains. And in acute exacerbations of chronic bronchitis involving these two pathogens, sputum cultures taken seven days after a two-week course of therapy showed that Bactrim eradicated these bacteria in 91% (50 of 55) of the patients treated.[6]

H. influenzae—even
cillin-resistant strains

cks *S. pneumoniae*



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Bactrim is contraindicated in pregnancy at term and nursing mothers, infants under two months of age, documented megaloblastic anemia due to folate deficiency and hypersensitivity.

Bactrim DS. For acute exacerbations of chronic bronchitis in adults* when it offers an advantage over single-agent antibacterials.

References: 1. Hughes DTD, Bye A, Hodder P: *Adv Antimicrob Antineoplastic Chemother 1/2*:1105-1106, 1971. **2.** Jordan GW *et al: Can Med Assoc J 112*:91S-95S, Jun 14, 1975. **3.** Beck H, Pechere JC: *Prog Antimicrob Anticancer Chemother 1*:663-667, 1969. **4.** Quintiliani R: Microbiological and therapeutic considerations in exacerbations of chronic bronchitis, in *Chronic Bronchitis and Its Acute Exacerbations: Current Diagnostic and Therapeutic Concepts;* Princeton Junction, NJ, Communications Media for Education, Inc., 1980, pp. 9-12. **5.** Schreiner A *et al: Infection 6*(2):54-56, 1978. **6.** Data on file, Hoffmann-La Roche Inc., Nutley, NJ. **7.** Chodosh S: Treatment of acute exacerbations of chronic bronchitis: results of a double-blind crossover clinical trial, in *Chronic Bronchitis and Its Acute Exacerbations: Current Diagnostic and Therapeutic Concepts. Op. cit.*, pp. 15-16. **8.** Chervinsky P: Double-blind clinical comparisons between trimethoprim-sulfamethoxazole (Bactrim™) and ampicillin in the treatment of bronchitic exacerbations. *Ibid.*, pp. 17-18. **9.** Dulfano MJ: Trimethoprim-sulfamethoxazole vs. ampicillin in the treatment of exacerbations of chronic bronchitis. *Ibid.*, pp. 19-20. **10.** Medici TC: Trimethoprim-sulfamethoxazole (Bactrim™) in treating acute exacerbations of chronic bronchitis: summary of European clinical experience. *Ibid.*, pp. 13-14.

Economical b.i.d.

Bactrim™ DS

(160 mg trimethoprim and 800 mg sulfamethoxazole/Roche)

*Due to susceptible organisms. **Please see next page for summary of product information.**

Bactrim™

(trimethoprim and sulfamethoxazole/Roche)

Before prescribing, please consult complete product information, a summary of which follows:

Indications and Usage: For the treatment of urinary tract infections due to susceptible strains of the following organisms: *Escherichia coli, Klebsiella-Enterobacter, Proteus mirabilis, Proteus vulgaris, Proteus morganii.* It is recommended that initial episodes of uncomplicated urinary tract infections be treated with a single effective antibacterial agent rather than the combination. *Note* The increasing frequency of resistant organisms limits the usefulness of all antibacterials, especially in these urinary tract infections

For acute otitis media in children due to susceptible strains of *Haemophilus influenzae* or *Streptococcus pneumoniae* when in physician's judgment it offers an advantage over other antimicrobials. To date, there are limited data on the safety of repeated use of Bactrim in children under two years of age. Bactrim is not indicated for prophylactic or prolonged administration in otitis media at any age.

For acute exacerbations of chronic bronchitis in adults due to susceptible strains of *Haemophilus influenzae* or *Streptococcus pneumoniae* when in physician's judgment it offers an advantage over a single antimicrobial agent.

For enteritis due to susceptible strains of *Shigella flexneri* and *Shigella sonnei* when antibacterial therapy is indicated.

Also for the treatment of documented *Pneumocystis carinii* pneumonitis.

Contraindications: Hypersensitivity to trimethoprim or sulfonamides, patients with documented megaloblastic anemia due to folate deficiency, pregnancy at term, nursing mothers because sulfonamides are excreted in human milk and may cause kernicterus, infants less than 2 months of age

Warnings: BACTRIM SHOULD NOT BE USED TO TREAT STREPTOCOCCAL PHARYNGITIS. Clinical studies show that patients with group A β-hemolytic streptococcal tonsillopharyngitis have higher incidence of bacteriologic failure when treated with Bactrim than do those treated with penicillin. Deaths from hypersensitivity reactions, agranulocytosis, aplastic anemia and other blood dyscrasias have been associated with sulfonamides. Experience with trimethoprim is much more limited but occasional interference with hematopoiesis has been reported as well as an increased incidence of thrombopenia with purpura in elderly patients on certain diuretics, primarily thiazides. Sore throat, fever, pallor, purpura or jaundice may be early signs of serious blood disorders. Frequent CBC's are recommended; therapy should be discontinued if a significantly reduced count of any formed blood element is noted.

Precautions: *General.* Use cautiously in patients with impaired renal or hepatic function, possible folate deficiency, severe allergy or bronchial asthma. In patients with glucose-6-phosphate dehydrogenase deficiency, hemolysis, frequently dose-related, may occur. During therapy, maintain adequate fluid intake and perform frequent urinalyses, with careful microscopic examination, and renal function tests, particularly where there is impaired renal function. Bactrim may prolong prothrombin time in those receiving warfarin; reassess coagulation time when administering Bactrim to these patients.

Pregnancy. Teratogenic Effects. Pregnancy Category C. Because trimethoprim and sulfamethoxazole may interfere with folic acid metabolism, use during pregnancy only if potential benefits justify the potential risk to the fetus.

Adverse Reactions: All major reactions to sulfonamides and trimethoprim are included, even if not reported with Bactrim. *Blood dyscrasias.* Agranulocytosis, aplastic anemia, megaloblastic anemia, thrombopenia, leukopenia, hemolytic anemia, purpura, hypoprothrombinemia and methemoglobinemia. *Allergic reactions.* Erythema multiforme, Stevens-Johnson syndrome, generalized skin eruptions, epidermal necrolysis, urticaria, serum sickness, pruritus, exfoliative dermatitis, anaphylactoid reactions, periorbital edema, conjunctival and scleral injection, photosensitization, arthralgia and allergic myocarditis. *Gastrointestinal reactions.* Glossitis, stomatitis, nausea, emesis, abdominal pains, hepatitis, diarrhea, pseudomembranous colitis and pancreatitis. *CNS reactions.* Headache, peripheral neuritis, mental depression, convulsions, ataxia, hallucinations, tinnitus, vertigo, insomnia, apathy, fatigue, muscle weakness and nervousness. *Miscellaneous reactions.* Drug fever, chills, toxic nephrosis with oliguria and anuria, periarteritis nodosa and L.E. phenomenon. Due to certain chemical similarities to some goitrogens, diuretics (acetazolamide, thiazides) and oral hypoglycemic agents, sulfonamides have caused rare instances of goiter production, diuresis and hypoglycemia in patients; cross-sensitivity with these agents may exist. In rats, long-term therapy with sulfonamides has produced thyroid malignancies.

Dosage: Not recommended for infants less than two months of age.

URINARY TRACT INFECTIONS AND SHIGELLOSIS IN ADULTS AND CHILDREN, AND ACUTE OTITIS MEDIA IN CHILDREN

Adults. Usual adult dosage for urinary tract infections—1 DS tablet (double strength), 2 tablets (single strength) or 4 teasp. (20 ml) b.i.d. for 10-14 days. Use identical daily dosage for 5 days for shigellosis.

Children. Recommended dosage for children with urinary tract infections or acute otitis media—8 mg/kg trimethoprim and 40 mg/kg sulfamethoxazole per 24 hours, in two divided doses for 10 days. Use identical daily dosage for 5 days for shigellosis.

For patients with renal impairment. Use recommended dosage regimen when creatinine clearance is above 30 ml/min. If creatinine clearance is between 15 and 30 ml/min, use one-half the usual regimen. Bactrim is not recommended if creatinine clearance is below 15 ml/min.

ACUTE EXACERBATIONS OF CHRONIC BRONCHITIS IN ADULTS

Usual adult dosage. 1 DS tablet (double strength), 2 tablets (single strength) or 4 teasp. (20 ml) b.i.d. for 14 days.

PNEUMOCYSTIS CARINII PNEUMONITIS

Recommended dosage: 20 mg/kg trimethoprim and 100 mg/kg sulfamethoxazole per 24 hours in equal doses every 6 hours for 14 days. See complete product information for suggested children's dosage table.

Supplied: *Double Strength (DS) tablets,* each containing 160 mg trimethoprim and 800 mg sulfamethoxazole, bottles of 100, Tel-E-Dose® packages of 100, Prescription Paks of 20 and 28. *Tablets,* each containing 80 mg trimethoprim and 400 mg sulfamethoxazole—bottles of 100 and 500, Tel-E-Dose® packages of 100, Prescription Paks of 40. *Pediatric Suspension,* containing 40 mg trimethoprim and 200 mg sulfamethoxazole per teaspoonful (5 ml), cherry flavored—bottles of 100 ml and 16 oz (1 pint). *Suspension,* containing 40 mg trimethoprim and 200 mg sulfamethoxazole per teaspoonful (5 ml), fruit-licorice flavored—bottles of 16 oz (1 pint).

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senior postdoctoral fellow in immunology and rheumatology at the University of Missouri School of Medicine in Columbia, Mo. Treadwell's research involves the study of antinuclear antibodies and how they relate to various arthritis conditions and connective tissue disorders.

Dr. Brian A. McMillen has been appointed assistant professor in the Department of Pharmacology. McMillen's primary research involves anti-anxiety and anti-psychotic drugs and their side effects. His most recent research is on buspirone. McMillen received his undergraduate degree from Beloit College, Beloit, Wis., and his M.D. from the University of Illinois Medical Center at Chicago. Prior to his appointment, he was assistant professor of pharmacology at the University of Texas Health Science Center in Dallas, where he also was a postdoctoral fellow in pharmacology during 1977-78.

Dr. Jerome S. Haller has joined the Department of Pediatrics as associate professor and director of pediatric neurology. Prior to his appointment, he was associate professor of pediatrics at Tufts University School of Medicine in Boston, Mass. Haller was associate clinical consultant in neurology for the National Institutes of Health in Bethesda, Md., during 1970-1972. A medical consultant for the New England Chapter of the Reye's Foundation, Haller currently is serving as consultant for the National Reye's Syndrome Foundation based in Michigan. He received his undergraduate degree from Queens College, City University of New York, and his medical degree from the University of Berne in Berne, Switzerland.

A paper by Donald J. Fletcher, Ph.D., assistant professor of anatomy, was presented at the 22nd annual meeting of the American Society for Cell Biology Dec. 2 at Baltimore, Md. The subject was "Secretory Characterization of Islet Cell-Enriched Populations Before and After Culture."

The November issue of *Hospital Practice* contains a paper by Dr. Peter R. Lichstein, assistant professor of medicine, on "Can a Physician Heal a Hex?"

Dr. E. Jackson Allison Jr., associate professor and chairman of the Department of Emergency Medicine, has co-authored two recent papers. Richard C. Hunt, ECU second-year medical student, was lead author and principal investigator of a paper entitled "Effects of Standing Orders on Paramedic Pre-hospital Treatment of Cardiopulmonary Arrest" in the November issue of the *Journal of Emergency Medical Services*.

Allison and Hunt also collaborated on an original case report, "Suppression of Demand Pacemaker Activity by Coarse Ventricular Fibrillation," in the November-December issue of *Emergency Medical Services*.

Two authors collaborated on a paper on "Cellular Distribution within the Rat Adenohypophysis: A Morphometric Study" in the September issue of *Anatomical Record*. They were Max C. Poole, Ph.D., assistant professor of anatomy, and Dr. W. Daniel Kornegay III, clinical associate professor of family medicine.

Dr. Dennis R. Sinar, associate professor of gastroenterology, presented a paper on "Unsuspected Lesion in the Bypassed Segment after Gastric Bypass for Morbid Obesity" at the November meeting of the American Federation of Clinic Research.

Co-authors were Dr. Edward G. Flickinger, associate professor of surgery; Dr. Thomas F. O'Brien Jr., professor of gastroenterology; Dr. Hee Kim Park, associate professor of pathology and laboratory medicine; Dr. Robert R. Sloss, assistant professor of pathology; and Dr. Walter J. Pories, professor and chairperson of the Department of Surgery.

During the annual meeting of the Society for Neuroscience in November at Minneapolis, Richard H. Ray, Ph.D., assistant professor of physiology, presented a paper on "A Study of Coding in Primary Afferents in the Raccoon: The Neural Representation of Mechanical Stimuli Varying in Location and Intensity."

Dr. C. Tate Holbrook, assistant professor of pediatrics, presented a paper on "Advances in Childhood Cancer Therapy" at a meeting of the High Point Unit of the American Cancer Society in November.

Dr. Theodore Kushnick, professor of pediatrics, spoke on "Dysmorphology" as a Distinguished Lecturer at St. Joseph's Hospital in Patterson, N.J. and Hackensack Medical Center at Hackensack, N.J. in November.

Dr. Robert S. Fulghum, associate professor of microbiology, delivered a research presentation in December at the North Carolina branch of the American Society for Microbiology in Research Triangle Park. Co-authors were Ronald Hoogmoed, a second-year student; Jack E. Brinn Jr., Ph.D., associate professor of anatomy; and Mason Smith, Ph.D., associate pro-

fessor of microbiology, on the subject of "Longitudinal Studies of Induced Otitis Media in the Gerbil."

Todd L. Savitt, Ph.D., associate professor of humanities, presented a paper, "Educating Black Physicians, 1865-1920," on Dec. 7 at the Trent Society meeting at Duke University Medical Center. Savitt recently was appointed to a three-year term on the *Journal of the History of Medicine and Allied Sciences* Editorial Board.

Harold J. May, Ph.D., assistant professor of family medicine, was author of a paper on "Management of Sexual Concerns by Family Physicians" at a November conference on "Counseling in Family Medicine" sponsored by the UNC-Chapel Hill Department of Family Medicine.

Linda Z. Nieman, Ph.D., assistant director, Center for Medical Education and Evaluation, and Dr. Harold Kallman, professor of family medicine, gave presentations on the "Confusional States Chart Audit as a Guide to Resident Competency" at a seminar on "Family Medicine and the Aging Patient: Clinical and Educational Issues" in October at Asheville.

The American Academy of Family Physicians has announced the appointment of Dr. James G. Jones, professor and chairperson of the Department of Family Medicine, as AAFP representative on the residency review committee for family practice during 1983-85.

Dr. Robert G. Crounse, professor of surgery and director, Trace Element Center, was part of a group presentation at the American Public Health association meeting at Montreal, Canada in November. The subject was "A Case Control Study of Skin Cancer and Selenium in Eastern North Carolina."

Others in the group were Larry C. Clark, Ph.D., Cornell Division of Preventive Medicine; Gloria F. Graham, dermatologist, of Wilson; Roger Grimson, Barbara Hulka and Carl Shy of the UNC School of Public Health at Chapel Hill.

Dr. Crounse also served as consultant on grant applications for Baylor University in the Cardiovascular Research and Demonstration Center in Washington, D.C., in November.

Five scientists, including four from ECU School of Medicine, contributed to a paper recently published in the *Journal of Endokrinologie* in Leipsig, East Germany. The subject was "Plasma Oxytocin and Estradiol in Pelvic Neurectomized Rats with Blocked Parturition." Researchers were Hubert W. Burden, Ph.D., professor of anatomy; Dr. R. C. Gorewit, professor of animal science at Cornell University in Ithaca, N.Y.; T. M. Louis, Ph.D., associate professor of anatomy; P. D. Muse, technician in anatomy; and I. E. Lawrence Jr., Ph.D., professor of anatomy.

Dr. Leonard S. English, associate professor of biochemistry, published a paper entitled "Immunoregulatory Factors Produced by Activated Lymph Nodes In Vivo" in a recent issue of *Advances in Experimental Medicine and Biology*.

A paper by Dr. Richard S. Marx, assistant professor of medicine, entitled "Mucorales Species Activation of a Serum Leukotactic Factor," was published in the December issue of the *Infection and Immunity Journal*. Technician Keith R. Forsyth and Suzanne K. Hentz, third-year student, participated.

Dr. Julie A. Nickelsen, assistant professor of family medicine, presented an exhibit of APPLDOC, a computer program for residency training, at the November meeting of the Association of American Medical Colleges in Washington, D.C. A presentation, "Five Resources to Health as a Basis for Predoctoral Education in Family Medicine," was given by Linda A. Nieman, Ph.D., and Theodore W. Whitley, Ph.D., assistant directors for Medical Education and Evaluation, at the same meeting.

1982 Interim Meeting of the AMA House of Delegates

The largest American Medical Association House of Delegates ever — 305 delegates — met in Miami, December 5-8, 1982. During these four days, the House took definitive action on 135 items of business. Among the items of greatest importance to North Carolina physicians were:

1) The establishment of a *Hospital Medical Staff Section* within the AMA. The medical staff of every hospital in the country will have the right to elect a representative to the Section, which would meet at the time of each AMA meeting, and the Section would have a delegate to the House of Delegates. This is

similar to the already existing Section on Medical Schools. All state and county medical societies are urged to work closely with medical staffs in their areas to facilitate participation in the Section. It is recognized that state societies may want to organize a similar Section at their annual meetings and that some county societies may want to organize a Hospital Staff Liaison Committee.

2) Recognizing the difficulties frequently experienced with *Joint Commission on the Accreditation of Hospitals* review of hospitals, the H of D reaffirmed AMA policy which opposes accreditation requirements which impose rigid, uniform, mandatory administrative procedures, methods of operation, nomenclature, or forms of organization for the hospital, its governing board, attending staff and committees. The AMA also recognizes that excellence in patient care is more easily attainable when the accreditation process is flexible and is concerned with evaluating the quality of hospital service and not the administrative procedures. . .

3) On the question of *Competition in Medicine*, the H of D recognized that, in response to competitive economic pressures, there are changes in practice arrangements, relations between physicians and hospitals, reimbursement policies for third party payers and professional relations among physicians.

AMA policy supports the concepts of fair market competition and neutrality of public policy among alternative health care delivery systems.

The AMA Action Plan will help physicians determine what kind of practice opportunities are available; how to organize practice resources effectively; and where to obtain medical practice finances.

4) Because of the frequent difficulty and confusion even in *Defining a Physician*, the House reaffirmed the definition that: "A physician is a person who having been regularly admitted to a medical school, duly recognized in the country in which it is located, has successfully completed the prescribed course of studies in medicine and has acquired the requisite qualifications to be legally licensed to practice medicine."

5) In regards to *The Independent Practice of Medicine by "Nurse Practitioners,"* the House adopted the policy that: "The AMA, in the public interest, urged

state medical associations to oppose enactment of legislation to authorize the totally independent practice of medicine by an individual who has not completed the state's requirements for licensure to engage in the practice of medicine and surgery in all of its branches."

6) In the area of *Cost Shifting*, the House voted to:

a) Continue to oppose changes in the Medicare and Medicaid hospital reimbursement systems that result in cost shifting to private patients.

b) Continue to widely publicize the deleterious effects on the private sector of such cost shifts in efforts to save dollars for the federal programs.

7) As to *Advertising and Labeling of Alcoholic Beverages*, the House voted:

a) To reaffirm its position that containers of all alcoholic beverages be required to bear the following statement on their labels:

> "Alcohol may be injurious to your health and, if consumed during pregnancy, to the health of unborn children."

b) To encourage the media that accept advertising of alcoholic beverages to refuse such advertising.

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Delegate from North Carolina

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Winston-Salem, March 16, 1983, 7 p.m., Forsyth Memorial Hospital (Meeting Room I)
Durham, April 20, 1983, 7 p.m., Durham General Hospital (Watts Bldg., Room III-A)
Pinehurst, May 4, 1983, 2 p.m., Pinehurst Hotel (Crystal Room)
Greensboro, June 8, 1983, 7 p.m., Moses H. Cone Memorial Hospital (Room 917)
Kill Devil Hills, June 16, 1983, 2 p.m., Holiday Inn
Raleigh, Sept. 1, 1983, 7 p.m., N.C. Medical Society Building (Auditorium)
Asheville, Oct. 18, 1983, 7 p.m., AHEC Building (Classroom I)
Charlotte, Nov. 1, 1983, 7 p.m., Presbyterian Hospital (Auditorium)

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Medical Mutual is also pleased to announce a new loss prevention program for medical support staff. The new program, **Records and Other Necessities,** is offered free of charge to all support personnel, whether they deal directly with the public or not.

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Charlotte, March 22 and 23, 1983
Durham, April 12, 1983
Greensboro, April 13, 1983
Wilson, May 11, 1983
Albemarle, May 17, 1983
Hickory, June 28, 1983

Many other meetings will be scheduled throughout 1983 and across the state. Watch for updated schedules quarterly in our newsletter and monthly in the N.C. Medical Journal "Bulletin Board."

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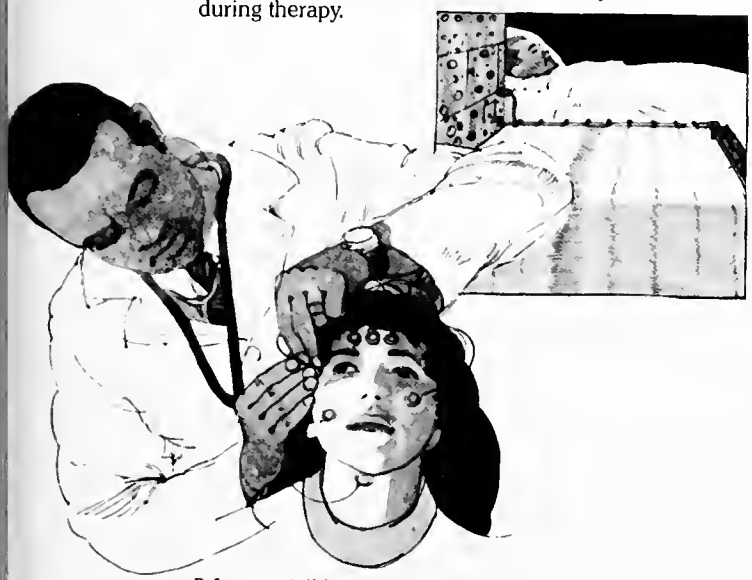

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Warnings: Caution patients about possible combined effects with alcohol and other CNS depressants. An additive effect may occur if alcohol is consumed the day following use for nighttime sedation. This potential may exist for several days following discontinuation. Caution against hazardous occupations requiring complete mental alertness (*e.g.*, operating machinery, driving). Potential impairment of performance of such activities may occur the day following ingestion. Not recommended for use in persons under 15 years of age. Though physical and psychological dependence have not been reported on recommended doses, abrupt discontinuation should be avoided with gradual tapering of dosage for those patients on medication for a prolonged period of time. Use caution in administering to addiction-prone individuals or those who might increase dosage.

Precautions: In elderly and debilitated patients, it is recommended that the dosage be limited to 15 mg to reduce risk of oversedation, dizziness, confusion and/or ataxia. Consider potential additive effects with other hypnotics or CNS depressants. Employ usual precautions in severely depressed patients, or in those with latent depression or suicidal tendencies, or in those with impaired renal or hepatic function.

Adverse Reactions: Dizziness, drowsiness, lightheadedness, staggering, ataxia and falling have occurred, particularly in elderly or debilitated patients. Severe sedation, lethargy, disorientation and coma, probably indicative of drug intolerance or overdosage, have been reported. Also reported: headache, heartburn, upset stomach, nausea, vomiting, diarrhea, constipation, GI pain, nervousness, talkativeness, apprehension, irritability, weakness, palpitations, chest pains, body and joint pains and GU complaints. There have also been rare occurrences of leukopenia, granulocytopenia, sweating, flushes, difficulty in focusing, blurred vision, burning eyes, faintness, hypotension, shortness of breath, pruritus, skin rash, dry mouth, bitter taste, excessive salivation, anorexia, euphoria, depression, slurred speech, confusion, restlessness, hallucinations, and elevated SGOT, SGPT, total and direct bilirubins, and alkaline phosphatase; and paradoxical reactions, *e.g.*, excitement, stimulation and hyperactivity.

Dosage: Individualize for maximum beneficial effect. *Adults:* 30 mg usual dosage; 15 mg may suffice in some patients. *Elderly or debilitated patients:* 15 mg recommended initially until response is determined.

Supplied: Capsules containing 15 mg or 30 mg flurazepam HCl.

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Only one sleep medication objectively fulfills all these important criteria:

- Rapid onset of sleep.[1]
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- Seldom produces morning hangover.[3]
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Please see summary of product information on reverse side.

North Carolina MEDICAL JOURNAL

for doctors and their patients

Official Journal of the NORTH CAROLINA MEDICAL SOCIETY April 1983, Volume 44, No. 4

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Pinehurst

1983 Sports Symposium: July 1-3
Wrightsville Beach

Pinworms work the night shift

Artist's interpretation:
The nocturnal egg-laying of the female pinworm causes acute perianal itch...making children shift sleeplessly through the night.

Put pinworms out of work...

Promptly paralyzes nworms and roundworms

ntiminth® (pyrantel pamoate) s a unique, rapid immobilizing ect on worms. Unlike meben- zole, which blocks glucose take—slowly "starving" lminths to death—Antiminth ickly acts on the neuro- uscular junction to promptly ralyze parasites.

97% efficacy with a single dose

single dose of Antiminth livers rapid clinical and parasi- logical cures, "Single doses... owed high overall efficacy ainst *Enterobius vermicularis* 7.2%) and *Ascaris mbricoides* (97.5%)."[1]

Simple, well tolerated therapy

ntiminth offers ease of adminis- ation and patient tolerance. ...when compared to the other ngle dose agents available, ntiminth] has the advantage of eing non-staining and may be tter tolerated."[2]

The dosage form children like

ntiminth is available as a pleas- nt tasting, caramel-flavored ral suspension. Effective in just

one dose against pinworm and roundworm—in both children and adults—Antiminth is easy-to-administer and easy-to-take.

Respected around-the-world

In some parts of the world, large populations are afflicted with helminthic infections. Physicians in endemic areas have become experts on parasitic diseases—and have come to rely on Antiminth for the rapid cure of infestations. Antiminth is recommended as an agent of first choice for pinworm and roundworm by leading medical authorities.[3]

Warnings

Usage in Pregnancy Reproduction studies have been performed in animals and there was no evidence of propensity for harm to the fetus. The relevance to the human is not known.

There is no experience in pregnant women who have received this drug.

The drug has not been extensively studied in children under two years; therefore, in the treatment of children under the age of two years, the relative benefit/risk should be considered.

Precautions

Minor transient elevations of SGOT have occurred in a small percentage of patients. Therefore, this drug should be used with caution in patients with pre-existing liver dysfunction.

Adverse Reactions

The most frequently encountered adverse reactions are related to the gastrointestinal system.

Gastrointestinal and hepatic reactions: anorexia, nausea, vomiting, gastralgia, abdominal cramps, diarrhea and tenesmus, transient elevation of SGOT.

CNS reactions: headache, dizziness, drowsiness, and insomnia. Skin reactions: rashes.

Dosage and Administration

Children and Adults Antiminth Oral Suspension (50 mg of pyrantel base/ml) should be administered in a single dose of 11 mg of pyrantel base per kg of body weight (or 5 mg/lb.); maximum total dose 1 gram. This corresponds to a simplified dosage regimen of 1 ml of Antiminth per 10 lb. of body weight. (One teaspoonful = 5 ml.)

Antiminth (pyrantel pamoate) Oral Suspension may be administered without regard to ingestion of food or time of day, and purging is not necessary prior to, during, or after therapy. It may be taken with milk or fruit juices.

References 1. Pitts NE, Migliardi JR: *Clinical Pediatrics* 13:87, 1974. **2.** Modell W: *Drugs of Choice* 1980-1981. C. V. Mosby Co., St. Louis, 1980, p. 362. **3.** Goodman LS, Gilman A: *The Pharmacologic Basis of Therapeutics*, 6th edition, MacMillan Publishing Co., Inc., New York, 1980, p. 1032.

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Prescribe Antiminth® Suspension

50 mg pyrantel base/ml

(pyrantel pamoate)

Cures pinworm and roundworm fast...with a single dose

SJW638

An added complication... in the treatment of bacterial bronchitis*

Brief Summary: Consult the package literature for prescribing information.

Indications and Usage: *Ceclor®* (cefaclor, Lilly) is indicated in the treatment of the following infections when caused by susceptible strains of the designated microorganisms:

Lower respiratory infections, including pneumonia, caused by *Streptococcus pneumoniae* (*Diplococcus pneumoniae*), *Haemophilus influenzae*, and *S. pyogenes* (group A beta-hemolytic streptococci).

Appropriate culture and susceptibility studies should be performed to determine susceptibility of the causative organism to Ceclor.

Contraindication: Ceclor is contraindicated in patients with known allergy to the cephalosporin group of antibiotics.

Warnings: IN PENICILLIN-SENSITIVE PATIENTS, CEPHALOSPORIN ANTIBIOTICS SHOULD BE ADMINISTERED CAUTIOUSLY. THERE IS CLINICAL AND LABORATORY EVIDENCE OF PARTIAL CROSS-ALLERGENICITY OF THE PENICILLINS AND THE CEPHALOSPORINS AND THERE ARE INSTANCES IN WHICH PATIENTS HAVE HAD REACTIONS, INCLUDING ANAPHYLAXIS, TO BOTH DRUG CLASSES.

Antibiotics, including Ceclor, should be administered cautiously to any patient who has demonstrated some form of allergy, particularly to drugs.

Pseudomembranous colitis has been reported with virtually all broad-spectrum antibiotics (including macrolides, semisynthetic penicillins, and cephalosporins); therefore, it is important to consider its diagnosis in patients who develop diarrhea in association with the use of all antibiotics. Such colitis may range in severity from mild to life-threatening.

Treatment with broad-spectrum antibiotics alters the normal flora of the colon and may permit overgrowth of clostridia. Studies indicate that a toxin produced by *Clostridium difficile* is one primary cause of antibiotic-associated colitis.

Mild cases of pseudomembranous colitis usually respond to drug discontinuance alone. In moderate to severe cases, management should include sigmoidoscopy, appropriate bacteriologic studies, and fluid, electrolyte, and protein supplementation. When the colitis does not improve after the drug has been discontinued, or when it is severe, oral vancomycin is the drug of choice for antibiotic-associated pseudomembranous colitis produced by *C. difficile*. Other causes of colitis should be ruled out.

Precautions: *General Precautions*—If an allergic reaction to Ceclor occurs, the drug should be discontinued, and, if necessary, the patient should be treated with appropriate agents, e.g., pressor amines, antihistamines, or corticosteroids.

Prolonged use of Ceclor may result in the overgrowth of nonsusceptible organisms. Careful observation of the patient is essential. If superinfection occurs during therapy, appropriate measures should be taken.

Positive direct Coombs' tests have been reported during treatment with the cephalosporin antibiotics. In hematologic studies or in transfusion cross-matching procedures when antiglobulin tests are performed on the minor side or in Coombs' testing of newborns whose mothers have received cephalosporin antibiotics before parturition, it should be recognized that a positive Coombs' test may be due to the drug.

Ceclor should be administered with caution in the presence of markedly impaired renal function. Under such conditions, careful clinical observation and laboratory studies should be made because safe dosage may be lower than that usually recommended.

As a result of administration of Ceclor, a false-positive reaction for glucose in the urine may occur. This has been observed with Benedict's and Fehling's solutions and also with Clinitest® tablets but not with Tes-Tape® (Glucose Enzymatic Test Strip, USP, Lilly).

Broad-spectrum antibiotics should be prescribed with caution in individuals with a history of gastrointestinal disease, particularly colitis.

Usage in Pregnancy—*Pregnancy Category B*—Reproduction studies have been performed in mice and rats at doses up to 12 times the human dose and in ferrets given three times the maximum human dose and have revealed no evidence of impaired fertility or harm to the fetus due to Ceclor. There are, however, no adequate and well-controlled studies in pregnant women. Because animal reproduction studies are not always predictive of human response, this drug should be used during pregnancy only if clearly needed.

Nursing Mothers—Small amounts of Ceclor have been detected in mothers' milk following administration of single 500-mg doses. Average levels were 0.18, 0.20, 0.21, and 0.16 mcg/ml at two, three, four, and five hours respectively. Trace amounts were detected at one hour. The effect on nursing infants is not known. Caution should be exercised when Ceclor® (cefaclor, Lilly) is administered to a nursing woman.

Usage in Children—Safety and effectiveness of this product in infants less than one month of age have not been established.

Adverse Reactions: Adverse effects considered related to therapy with Ceclor are uncommon and are listed below.

Gastrointestinal symptoms occur in about 2-5 percent of patients and include diarrhea (1 in 70).

Symptoms of pseudomembranous colitis may appear either during or after antibiotic treatment. Nausea and vomiting have been reported rarely.

Hypersensitivity reactions have been reported in about 1-5 percent of patients and include morbilliform eruptions (1 in 100). Pruritus, urticaria, and positive Coombs' tests each occur in less than 1% of patients. Cases of serum-sickness-like reactions (erythema multiforme or the above skin manifestations accompanied by arthritis/arthralgia and frequently fever) have been reported. These reactions are apparently due to hypersensitivity and have usually occurred during or following a second course of therapy with the drug. Such reactions have been reported more frequently in children than in adults. Signs and symptoms usually occur a few days after initiation of therapy and subside within a few days after cessation of therapy. No serious sequelae have been reported. Antihistamines and corticosteroids appear to enhance resolution of the syndrome.

Cases of anaphylaxis have been reported, half of which have occurred in patients with a history of penicillin allergy.

Other effects considered related to therapy included eosinophilia (1 in 50 patients) and genital pruritus or vaginitis (less than 1 in 100 patients).

Causal Relationship Uncertain—Transitory abnormalities in laboratory test results have been reported. Although they were of uncertain etiology, they are listed below to serve as alerting information for the physician.

Hepatic—Slight elevations of SGOT, SGPT, or alkaline phosphatase values (1 in 40).

Hematopoietic—Transient fluctuations in leukocyte count, predominantly lymphocytosis occurring in infants and young children (1 in 40).

Renal—Slight elevations in BUN or serum creatinine (less than 1 in 500) or abnormal urinalysis (less than 1 in 200).

10C

Some ampicillin-resistant strains of Haemophilus influenzae—a recognized complication of bacterial bronchitis*—are sensitive to treatment with Ceclor.[1-6]

In clinical trials, patients with bacterial bronchitis due to susceptible strains of Streptococcus pneumoniae, H. influenzae, S. pyogenes (group A beta-hemolytic streptococci), or multiple organisms achieved a satisfactory clinical response with Ceclor.[7]

Ceclor®
cefaclor

Pulvules®, 250 and 500 mg

* Many authorities attribute acute infectious exacerbation of chronic bronchitis to either *S. pneumoniae* or *H. influenzae*.

Note: Ceclor is contraindicated in patients with known allergy to cephalosporins and should be given cautiously to penicillin-allergic patients.

Penicillin is the usual drug of choice in the treatment and prevention of streptococcal infections, including the prophylaxis of rheumatic fever. See prescribing information.

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7. Data on file, Eli Lilly and Company.
8. Principles and Practice of Infectious Diseases, edited by G. L. Mandell, R.G. Douglas, Jr., and J.E. Bennett), p. 487, New York, John Wiley & Sons, 1979.

Lilly

Additional information available to the profession on request from Eli Lilly and Company, Indianapolis, Indiana 46285

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North Carolina
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for doctors and their patients

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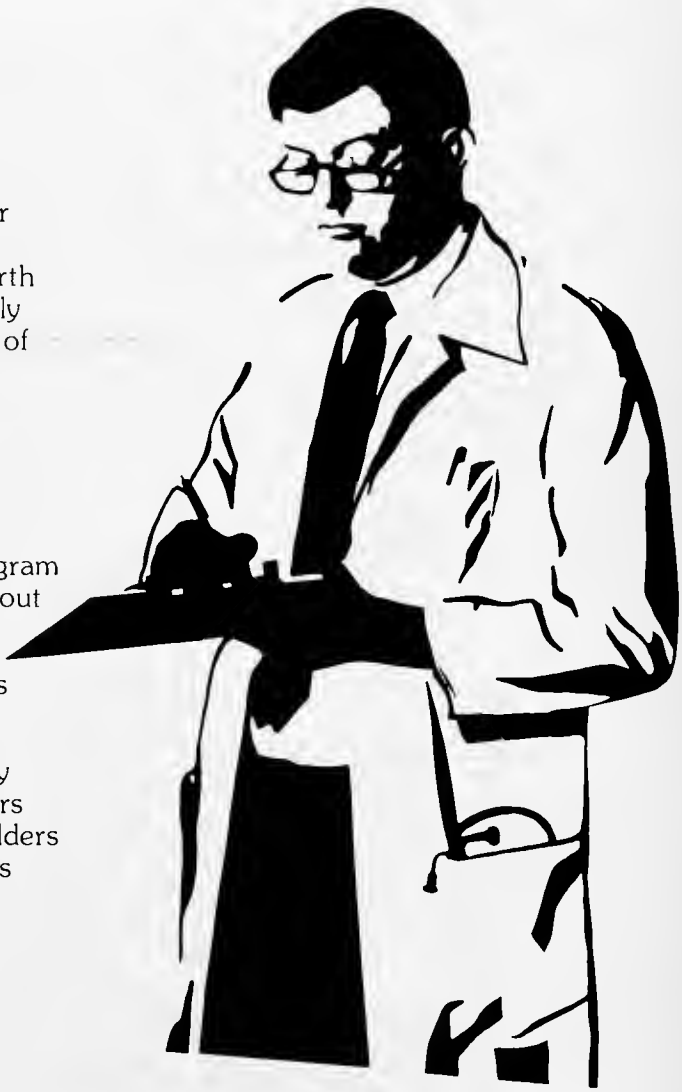

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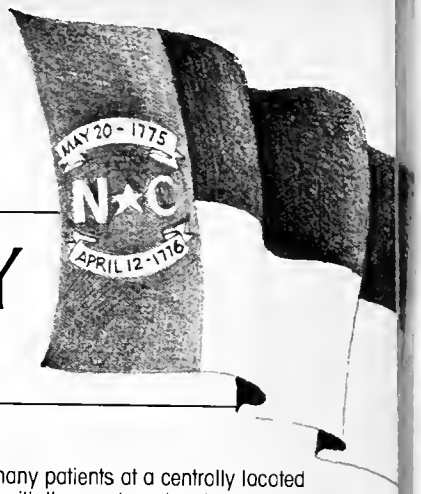

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Dr. Gaine Cannon

A modern-day version of the country doctor on horseback, Dr. Gaine Cannon covered his scattered practice around the Blue Ridge Mountain country near Balsom Grove, North Carolina, in a four-wheel-drive Jeep wagon.[1]

On an average working day, Dr. Cannon rose at sunup to see patients at his converted-farmhouse clinic before setting out to make his usual 15 to 20 house calls around the countryside. Generally, after treating his primary patient, he saw each member of the family, as well—his personal effort at preventive medicine.

Multiple services

With the nearest hospital some 60 miles away and no pharmacy closer than an hour-and-a-half drive, Dr. Cannon filled his own prescriptions, delivered babies and treated many patients at a centrally located general store with the most modern techniques and medications. After a day on the road—usually within a 50-mile radius—Dr. Cannon's office hours would begin at 5:30 p.m. and stretch on until the last patient was attended to. His record-keeping sessions routinely filled the hour before midnight—rounding off Dr. Cannon's 18-hour day.

At all hours

But emergencies often interrupted his sleep. Dr. Cannon claimed his real office hours were 24 hours a day, and his patients revered him for it.

Dr. Cannon died in 1966 at the age of 68. He will be long remembered—most especially by the more than 5000 North Carolinians he helped bring into the world, some of them at the side of a rutted country road.

Reference: 1. Doctor in the backwoods, in Lee RV, Ermerl S *et al: The Physician* New York, Life Science Library, Time Inc., 1967, pp 38-50

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For the estimated 70 percent of nonpsychotic depressed patients who are also anxious,[1] Limbitrol provides both amitriptyline, specific for symptoms of depression, and the effects of Librium® (chlordiazepoxide HCl), the tested and dependable anxiolytic. Limbitrol is, therefore, a better choice for these patients than dual agents that contain a phenothiazine, a class of antipsychotic drugs used infrequently in nonpsychotic patients.[1]

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- ☐ Gastrointestinal upset—73%

In two multicenter studies, only 1.9% of Limbitrol patients experienced cardiovascular side effects.[3]

Patients should be cautioned about the combined effects with alcohol or other CNS depressants and about activities requiring complete mental alertness such as operating machinery or driving a car.

References: 1. Rickels K: Drug treatment of anxiety, in *Psychopharmacology in the Practice of Medicine*, edited by Jarvik ME; New York, Appleton-Century-Crofts, 1977, p. 316 2. Feighner JP *et al. Psychopharmacology 61*: 217-229, Mar 1979. 3. Data on file, Hoffmann-La Roche Inc., Nutley, NJ

In moderate depression and anxiety

Limbitrol®

Tablets 5-12.5 each containing 5 mg chlordiazepoxide and 12.5 mg amitriptyline (as the hydrochloride salt)
Tablets 10-25 each containing 10 mg chlordiazepoxide and 25 mg amitriptyline (as the hydrochloride salt)

Please see summary of product information on following page.

LIMBITROL® TABLETS Ⓝ Tranquilizer—Antidepressant

Before prescribing, please consult complete product information, a summary of which follows:

Indications: Relief of moderate to severe depression associated with moderate to severe anxiety

Contraindications: Known hypersensitivity to benzodiazepines or tricyclic antidepressants. Do not use with monoamine oxidase (MAO) inhibitors or within 14 days following discontinuation of MAO inhibitors since hyperpyretic crises, severe convulsions and deaths have occurred with concomitant use, then initiate cautiously, gradually increasing dosage until optimal response is achieved. Contraindicated during acute recovery phase following myocardial infarction.

Warnings: Use with great care in patients with history of urinary retention or angle-closure glaucoma. Severe constipation may occur in patients taking tricyclic antidepressants and anticholinergic-type drugs. Closely supervise cardiovascular patients (Arrhythmias, sinus tachycardia and prolongation of conduction time reported with use of tricyclic antidepressants, especially high doses. Myocardial infarction and stroke reported with use of this class of drugs.) Caution patients about possible combined effects with alcohol and other CNS depressants and against hazardous occupations requiring complete mental alertness (e.g., operating machinery, driving).

Usage in Pregnancy: **Use of minor tranquilizers during the first trimester should almost always be avoided because of increased risk of congenital malformations as suggested in several studies. Consider possibility of pregnancy when instituting therapy; advise patients to discuss therapy if they intend to or do become pregnant.**

Since physical and psychological dependence to chlordiazepoxide have been reported rarely, use caution in administering Limbitrol to addiction-prone individuals or those who might increase dosage. Withdrawal symptoms following discontinuation of either component alone have been reported (nausea, headache and malaise for amitriptyline, symptoms [including convulsions] similar to those of barbiturate withdrawal for chlordiazepoxide).

Precautions: Use with caution in patients with a history of seizures, in hyperthyroid patients or those on thyroid medication, and in patients with impaired renal or hepatic function. Because of the possibility of suicide in depressed patients, do not permit easy access to large quantities in these patients. Periodic liver function tests and blood counts are recommended during prolonged treatment. Amitriptyline component may block action of guanethidine or similar antihypertensives. Concomitant use with other psychotropic drugs has not been evaluated; sedative effects may be additive. Discontinue several days before surgery. Limit concomitant administration of ECT to essential treatment. See Warnings for precautions about pregnancy. Limbitrol should not be taken during the nursing period. Not recommended in children under 12. In the elderly and debilitated, limit to smallest effective dosage to preclude ataxia, oversedation, confusion or anticholinergic effects.

Adverse Reactions: Most frequently reported are those associated with either component alone: drowsiness, dry mouth, constipation, blurred vision, dizziness and bloating. Less frequently occurring reactions include vivid dreams, impotence, tremor, confusion and nasal congestion. Many depressive symptoms including anorexia, fatigue, weakness, restlessness and lethargy have been reported as side effects of both Limbitrol and amitriptyline. Granulocytopenia, jaundice and hepatic dysfunction have been observed rarely.

The following list includes adverse reactions not reported with Limbitrol but requiring consideration because they have been reported with one or both components or closely related drugs:

Cardiovascular: Hypotension, hypertension, tachycardia, palpitations, myocardial infarction, arrhythmias, heart block, stroke.

Psychiatric: Euphoria, apprehension, poor concentration, delusions, hallucinations, hypomania and increased or decreased libido.

Neurologic: Incoordination, ataxia, numbness, tingling and paresthesias of the extremities, extrapyramidal symptoms, syncope, changes in EEG patterns.

Anticholinergic: Disturbance of accommodation, paralytic ileus, urinary retention, dilatation of urinary tract.

Allergic: Skin rash, urticaria, photosensitization, edema of face and tongue, pruritus.

Hematologic: Bone marrow depression including agranulocytosis, eosinophilia, purpura, thrombocytopenia.

Gastrointestinal: Nausea, epigastric distress, vomiting, anorexia, stomatitis, peculiar taste, diarrhea, black tongue.

Endocrine: Testicular swelling and gynecomastia in the male, breast enlargement, galactorrhea and minor menstrual irregularities in the female and elevation and lowering of blood sugar levels.

Other: Headache, weight gain or loss, increased perspiration, urinary frequency, mydriasis, jaundice, alopecia, parotid swelling.

Overdosage: Immediately hospitalize patient suspected of having taken an overdose. Treatment is symptomatic and supportive. IV administration of 1 to 3 mg physostigmine salicylate has been reported to reverse the symptoms of amitriptyline poisoning. See complete product information for manifestation and treatment.

Dosage: Individualize according to symptom severity and patient response. Reduce to smallest effective dosage when satisfactory response is obtained. Larger portion of daily dose may be taken at bedtime. Single dose may suffice for some patients. Lower dosages are recommended for the elderly.

Limbitrol 10-25, initial dosage of three to four tablets daily in divided doses, increased up to six tablets or decreased to two tablets daily as required. Limbitrol 5-12.5, initial dosage of three to four tablets daily in divided doses, for patients who do not tolerate higher doses.

How Supplied: White, film-coated tablets, each containing 10 mg chlordiazepoxide and 25 mg amitriptyline (as the hydrochloride salt) and blue, film-coated tablets, each containing 5 mg chlordiazepoxide and 12.5 mg amitriptyline (as the hydrochloride salt)—bottles of 100 and 500, Tel-E-Dose® packages of 100, Prescription Paks of 50.

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EDITORIAL

The Editor's Philosophy

Eugene A. Stead, Jr., M.D.

I assumed the editorship of your *Journal* on January 1, 1983. Because of the lag between the acceptance of manuscripts and their processing by the printer, the first three issues of 1983 are the product of our retiring editor, Dr. John H. Felts. My ambition is to continue to build the *Journal* on the foundations of excellence established by John Felts and his predecessors.

Everyone realized that the new editor needed help in unbroken doses and acted accordingly. Dr. Felts; Dr. Charles Styron and the Editorial Board; Bill Hilliard and his staff at the Medical Society; Tom Bennett, the director of communications; and April Hart, the retiring managing editor, were particularly helpful. The Editorial Board has given me freedom to try out my ideas. The final verdict will be rendered by the readers. I hope you will debate issues in a column of letters to the editor.

The *Journal* will have five objectives.

1. Presentation of interesting clinical material by young authors who need to try their wings and develop skills in communication. I hope this material will be crisp and to the point. I want each report to highlight a single nugget of learning derived from clinical practice.

2. Presentation of new and old ways developed by North Carolina doctors to enhance services to patients.

3. Presentation of socioeconomic issues pertinent to the North Carolina scene.

4. Preservation of North Carolina medical history, past and present. The *Journal* is available in libraries throughout the country and is the only place where historical material can be placed with assurance that it will always be available.

5. Presentation of material of interest to our patients and the large number of persons in doctors' offices and in hospitals who make possible the delivery of care by doctors. This section will appear in the center of the *Journal* and will be printed on blue paper.

The Editorial Board has agreed to the addition of a subtitle to the *Journal* indicating that it is for patients as well as doctors. I hope the *Journal* will go from your desk to your waiting room. I believe the practicing profession can be an effective mechanism for giving the best information about medicine to the public.

Now to the practical business of producing the *Journal*. Mrs. Patricia (Penny) Hodgson who edited *Circulation* with me assumed the position of managing editor in October of 1982. With the help of Penny, Bill Hilliard, and Tom Bennett we have made a number of changes. Our cover design will feature cartoons by Dr. Ernest Craige, professor of cardiology at Chapel Hill. The cover and inside pages will be made of lighter weight paper. The binding will be different. By instituting these and other changes, including a new printer, the cost of each issue of the *Journal* will be decreased by about $2,000. Our new printer has given us a much shorter publication schedule, reducing the time between receiving our material and publishing it from 2½ months to 5 weeks. By going directly from the membership information stored in the Society's computer to special tape, the printer will no longer need to set type for the Roster. This should result in a saving of about $9,000. We will attempt to increase revenue from ads in the *Journal* and in the annual publication of the Roster.

Frank Neelon from Duke and Mac Mauney from Asheville are serving as associate editors. In the near future we will have an associate editor from the eastern part of the state.

We are interested in greater participation of specialists in the *Journal*. The question of whether the editor should have an editorial committee with representatives from each specialty is an open one. The Editorial Board of the *Journal*, chaired by Charles Styron, selects the editor, determines broad policy, and fires the editor if he fails to produce. It does not concern itself with the contents of each issue and it is not responsible for supplying a steady stream of manuscripts to the editor. An editor's editorial committee would be responsible for content rather than policy. Please express your opinion as to whether the editor should have a broad based editorial committee.

The editor can run an efficient office, he can publish the *Journal* on time, he can accept or reject material quickly, he can help with advertising and business management. But the editor can publish only the material that he receives. He is at the mercy of the members of the Society: If they write, he can publish; if they do not, he perishes. Because of my long association with Duke and the fact that I still have a number of "green stamps" outstanding, I can garner material from Duke with little difficulty. I need your help to balance out the Duke Mafia.

From the Department of Medicine, Box 3910, Duke University Medical Center, Durham, NC 27710.

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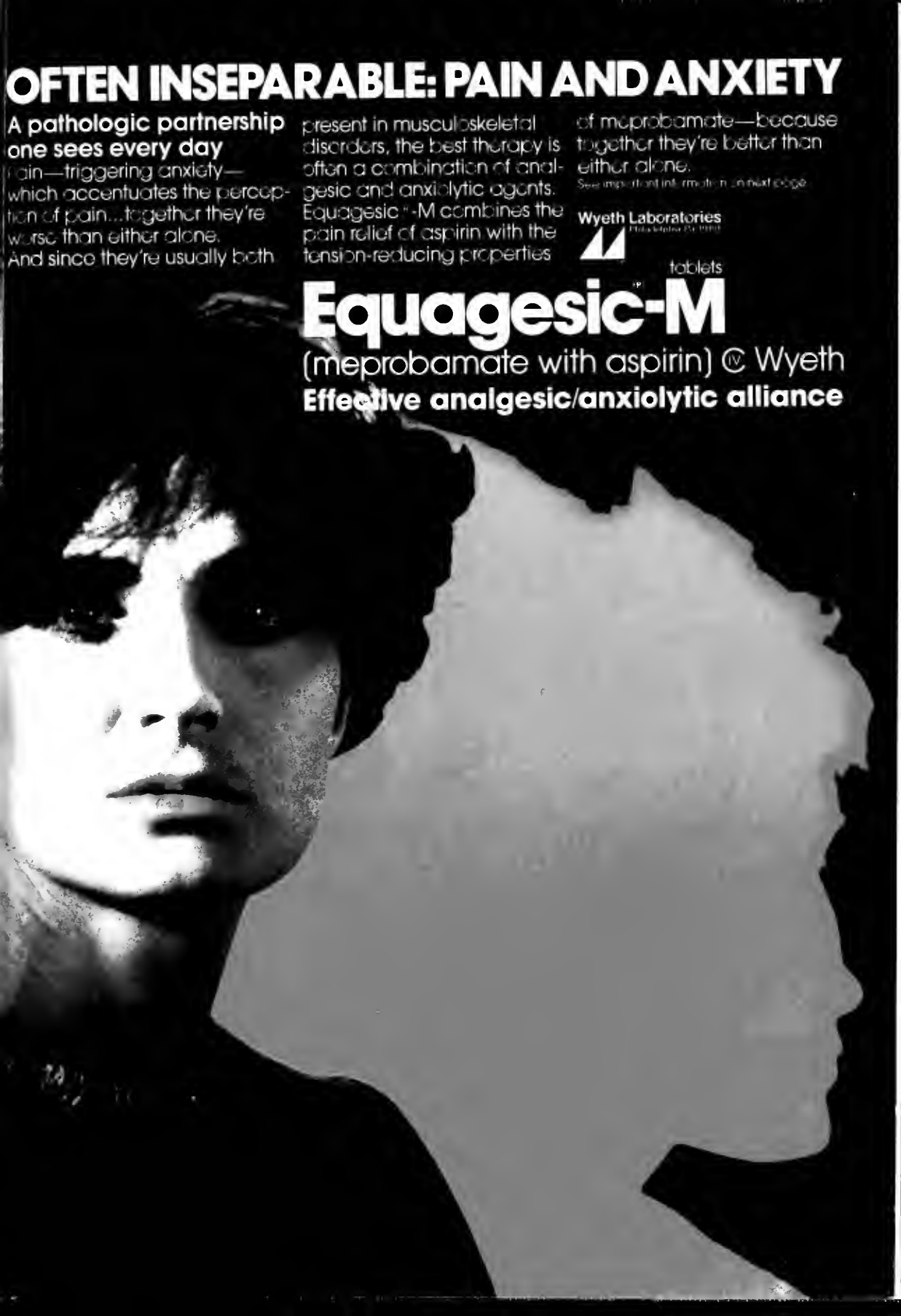

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(meprobamate with aspirin) © Wyeth

Effective analgesic/anxiolytic alliance

Proven superior to aspirin alone in controlled clinical trials

BRIEF SUMMARY

DESCRIPTION Each tablet contains 200 mg meprobamate and 325 mg aspirin

INDICATIONS Adjunct in short-term treatment of pain accompanied by tension and or anxiety in patients with musculoskeletal disease. Clinical trials demonstrated in these situations relief of pain is somewhat greater than with aspirin alone. Effectiveness in long-term use, ie, over 4 months, has not been assessed by systematic clinical studies. Physicians should periodically reassess usefulness of drug for individual patients.

CONTRAINDICATIONS ASPIRIN: Allergic or idiosyncratic reactions to aspirin or related compounds. MEPROBAMATE: Acute intermittent porphyria, allergic or idiosyncratic reactions to meprobamate or related compounds (e.g. carisoprodol, mebutamate, or carbromal).

WARNINGS ASPIRIN: Use salicylates with extreme caution in patients with peptic ulcer, asthma, coagulation abnormalities, hypoprothrombinemia, vitamin K deficiency, or those on anticoagulants. In rare instances, aspirin in persons allergic to salicylates may result in life-threatening allergic episodes.

MEPROBAMATE: DRUG DEPENDENCE: Physical and psychological dependence and abuse have occurred. Chronic intoxication from prolonged ingestion of, usually, greater than recommended doses is manifested by ataxia, slurred speech, and vertigo. Therefore, carefully supervise dose and amounts prescribed and avoid prolonged use, especially in alcoholics and others with known propensity for taking excessive quantities of drugs. Sudden withdrawal after prolonged and excessive use may precipitate recurrence of preexisting symptoms (e.g. anxiety, insomnia) or withdrawal reactions (e.g. vomiting, ataxia, tremors, muscle twitching, confusional states, hallucinosis, and rarely convulsive seizures). Such seizures are more likely in persons with CNS damage or preexistent or latent convulsive disorders. Onset of withdrawal symptoms occurs usually within 12 to 48 hours after discontinuation; symptoms usually cease within next 12 to 48 hour period. After excessive dosage has continued for weeks or months, reduce dosage gradually over 1 to 2 weeks rather than stop abruptly. Alternatively, a short-acting barbiturate may be substituted, then gradually withdrawn.

POTENTIALLY HAZARDOUS TASKS: Warn patients meprobamate may impair mental or physical abilities required for potentially hazardous tasks (e.g., driving or operating machinery).

ADDITIVE EFFECTS: Since CNS suppressant effects of meprobamate and alcohol or meprobamate and other psychotropic drugs may be additive, exercise caution with patients taking more than one of these agents simultaneously.

USAGE IN PREGNANCY AND LACTATION: An increased risk of congenital malformations associated with minor tranquilizers (meprobamate, chlordiazepoxide, and diazepam) during first trimester of pregnancy has been suggested in several studies. Because use of these drugs is rarely a matter of urgency, their use during this period should almost always be avoided. The possibility that a woman of childbearing potential may be pregnant at time of institution of therapy should be considered. Advise patients if they become pregnant during therapy or intend to become pregnant to communicate with their physicians about desirability of discontinuing the drug.

Meprobamate passes the placental barrier. If is present both in umbilical cord blood at or near maternal plasma levels and in breast milk at lactating mothers at concentrations two to four times that of maternal plasma. When use of meprobamate is contemplated in breastfeeding patients, consider the drug's higher concentrations in breast milk as compared to maternal plasma levels.

CHILDREN: Keep preparations with aspirin out of reach of children. Equagesic-M is not recommended for patients 12 years of age and under.

PRECAUTIONS ASPIRIN: Salicylates antagonize uricosuric activity of probenecid and sulfinpyrazone. Salicylates are reported to enhance hypoglycemic effect of sulfonylurea and acetazolamide. MEPROBAMATE: Use lowest effective dose, particularly in elderly and debilitated, to preclude oversedation. Meprobamate is metabolized in the liver and excreted by the kidneys; to avoid excess accumulation, exercise caution in its use in patients with compromised liver or kidney function. Meprobamate occasionally may precipitate seizures in epileptic patients. It should be prescribed cautiously and in small quantities to patients with suicidal tendencies.

ADVERSE REACTIONS ASPIRIN: May cause epigastric discomfort, nausea and vomiting. Hypersensitivity reactions including urticaria, angioneurotic edema, purpura, asthma, and anaphylaxis may rarely occur. Patients receiving large doses of salicylates may develop tinnitus.

MEPROBAMATE: CNS: Drowsiness, ataxia, dizziness, slurred speech, headache, vertigo, weakness, paresthesias, impairment of visual accommodation, euphoria, overstimulation, paradoxical excitement, fast EEG activity.

GI: Nausea, vomiting, diarrhea.

CARDIOVASCULAR: Palpitation, tachycardia, various forms of arrhythmia, transient ECG changes, syncope, hypotensive crisis.

ALLERGIC OR IDIOSYNCRATIC: Mild reactions are characterized by itchy urticarial or erythematous maculopapular rash, generalized or confined to the groin. Other reactions include leukopenia, acute nonthrombocytopenic purpura, petechiae, ecchymoses, eosinophilia, peripheral edema, adenopathy, fever, fixed drug eruption with cross reaction to carisoprodol, and cross sensitivity between meprobamate, mebutamate and meprobamate carbromal. Rare: more severe hypersensitivity reactions include hyperpyrexia, chills, angioneurotic edema, bronchospasm, vasculitis, and arthralgia. Also, anaphylaxis, exfoliative dermatitis, stomatitis, and proctitis. Stevens-Johnson syndrome and bullous dermatitis have occurred.

HEMATOLOGIC (SEE ALSO "ALLERGIC OR IDIOSYNCRATIC"): Agranulocytosis, aplastic anemia have been reported, although no causal relationship has been established, and thrombocytopenic purpura.

OTHER: Exacerbation of porphyric symptoms.

DOSAGE AND ADMINISTRATION Usual dose is one or two tablets, 3 to 4 times daily, as needed for relief of pain when tension or anxiety is present. Not recommended for patients 12 years of age and under.

OVERDOSAGE Treatment is essentially symptomatic and supportive. Any drug remaining in the stomach should be removed. Induction of vomiting or gastric lavage may be indicated. Activated charcoal may reduce absorption of both aspirin and meprobamate. Aspirin overdosage produces usual symptoms and signs of salicylate intoxication. Observation and treatment should include management of hyperthermia, specific parenteral electrolyte therapy for ketoacidosis and dehydration, watching for evidence of hemorrhagic manifestations due to hypoprothrombinemia which, if it occurs, usually requires whole blood transfusions. Suicidal attempts with meprobamate have resulted in drowsiness, lethargy, stupor, ataxia, coma, shock, vasomotor and respiratory collapse. Some suicidal attempts have been fatal. The following data, reported in the literature and from other sources, are not expected to correlate with each case, considering factors such as individual susceptibility and length of time from ingestion to treatment, but represent usual ranges reported. Acute simple overdose (meprobamate alone): Death has been reported with ingestion of as little as 12 gram meprobamate and survival with as much as 40 gram.

BLOOD LEVELS

0.5-2.0 mg percent represents usual blood level range after therapeutic doses. The level may occasionally be as high as 3.0 mg percent.

3-10 mg percent usually corresponds to findings of mild to moderate symptoms of overdosage, such as stupor or light coma.

10-20 mg percent usually corresponds to deeper coma, requiring more intensive treatment. Some fatalities occur.

At levels greater than 20 mg percent more fatalities than survivals can be expected.

Acute combined overdose (meprobamate with other psychotropic drugs or alcohol): Since effects can be additive, history of ingestion of a low dose of meprobamate plus any of these compounds (or of a relatively low blood or tissue level) cannot be used as a prognostic indicator.

In cases of excessive doses, sleep ensues rapidly and blood pressure, pulse, and respiratory rates are reduced to basal levels. Any drug remaining in stomach should be removed and symptomatic treatment given. Should respiration or blood pressure become compromised, respiratory assistance, CNS stimulants and pressor agents should be administered cautiously as indicated. Diuresis, osmotic (mannitol) diuresis, peritoneal dialysis, and hemodialysis have been used successfully in removing both aspirin and meprobamate. Alkalinization of the urine increases excretion of salicylates. Careful monitoring of urinary output is necessary, and caution should be taken to avoid overhydration.

Relapse and death after initial recovery have been attributed to incomplete gastric emptying and delayed absorption.

HOW SUPPLIED Bottles of 50 scored tablets.

Wyeth Laboratories
Philadelphia Pa 19101

SCIENTIFIC ARTICLE

Thyrotropin Releasing Hormone in Clinical Practice

David A. Ontjes, M.D.

THYROTROPIN releasing hormone (TRH) was the first of a series of neural hormones to be purified from the hypothalamus and shown to control pituitary secretion. TRH is a simple tripeptide (pyroglutamyl-histidyl-proline amide) that is released from the median eminence of the hypothalamus and transported to the anterior pituitary by a system of portal veins. The hormone stimulates the secretion of TSH by specific thyrotropin-producing cells.[1] Shortly after the determination of its structure and its chemical synthesis in the laboratory, TRH was found to stimulate not only the secretion of TSH when given intravenously to normal man, but also the secretion of a second pituitary hormone, prolactin. In a decade of exciting progress in neuroendocrine research since the isolation of TRH, a number of other potent hypothalamic releasing and inhibiting factors have been isolated, structurally analyzed and synthesized. While the utility of several of these hypothalamic hormones in clinical medicine is now obvious, only TRH has thus far been generally available for use by the practicing physician. An enormous number of studies have been conducted in normal human subjects and in patients with pituitary or thyroid diseases.[2, 3] It is the purpose of this article to comment on the value and limitations of TRH as a diagnostic agent for the physician in office and hospital practice, and to emphasize the need to correlate the TRH response with other clinical and laboratory manifestations of thyroid or pituitary disease.

The Normal Response to TRH

The secretion of TSH is regulated primarily by direct negative feedback suppression by the thyroid hormones, triiodothyronine (T_3) and thyroxine (T_4), acting at the level of the thyrotropin-producing cell. TRH is probably continuously elaborated by the hypothalamus to affect the set point of the system. The thyrotrope is exquisitely sensitive to small increments in the supply of thyroid hormones. In normal subjects the response to administered TRH is markedly reduced by small daily replacement doses of T_4 (60 μg) or T_3 (15 μg). Under these conditions, changes in the serum thyroid hormone levels are small and remain within the physiological concentration range.[4]

When maximally effective doses (≥ 400 μg) of TRH are given by intravenous injection to normal subjects a peak rise in serum TSH occurs within 15 to 30 minutes. Measurable increases in serum T_3 occur 90 to 150 minutes later. Normal women tend to have a greater TSH response to TRH than do men, particularly in older age groups. In men, but not in women, the TSH response declines with age. Table 1 shows the normal range in one laboratory for the TSH response according to sex and age. It is important to realize that a TSH rise of only 2 or 3 μU/ml may be perfectly normal in a man over 60 years of age!

Although exogenously administered TRH is a potent stimulator of prolactin secretion, the major physiological control of prolactin secretion is exerted by tonic hypothalamic inhibition. The principal prolactin inhibitory factor elaborated by the hypothalamus appears to be dopamine.[5] The threshold and maximally effective doses of TRH required for prolactin release are similar to the doses required for TSH release (15 to 400 μg). The question of whether TRH ever acts as a physiological stimulator of prolactin secretion is still unsettled. Certainly the dramatic release of prolactin triggered by suckling in the post-partum period is not accompanied by an increase in TSH, suggesting that TRH plays no role in this response.

The normal prolactin response to a maximally effective intravenous dose of TRH is also sex and age dependent as shown in Table 1. In both normal males and non-pregnant females the baseline serum prolactin is usually less than 15 ng/ml. The maximal prolactin levels observed approximately 30 minutes after injection of TRH are normally at least twice the baseline level. Women tend to be slightly more responsive than men, and with increasing age in both sexes there is a gradual decline in the minimum normal increment produced by TRH.

Other anterior pituitary hormones including growth hormone, LH, FSH, and ACTH do not normally rise in the serum after the administration of TRH. In certain pathological states mentioned below, paradoxical responses of growth hormone or ACTH may be seen.

Performance of the TRH Test

The TRH test is easily and safely performed in an office setting. TRH (Thypinone) is marketed in 1 ml single-dose ampules containing 500 μg of drug and costing approximately $30 in most pharmacies. In a standard test a baseline serum sample is drawn for TSH, prolactin or other pituitary hormones depending on the clinical situation. Then 500 μg of TRH is injected intravenously over 30-60 seconds. Except for mild feelings of nausea, malaise, flushing and the desire to urinate experienced in about half

From the Department of Medicine, University of North Carolina Medical School, Chapel Hill, NC 27514.

TABLE I
Normal Responses of TSH and Prolactin to TRH

	Normal Range			
	TSH (μU/ml)		Prolactin (ng/ml)	
	Men	Women	Men	Women
Basal level	<1 to 7	<1 to 7	1 to 20	1 to 25
Maximum increase over basal level				
Age 20-39	+7 to 29	+7 to 24	+15 to 40	+30 to 120
Age 40-59	+2 to 26	+7 to 30	+10 to 50	+20 to 120
Age 60-79	+2 to 16	+7 to 30	+5 to 90	+10 to 100

The incremental increases of TSH and prolactin follow a single intravenous injection of 400 μg of TRH. Data for this table are from P. J. Snyder et al., Ann Intern Med 1974;81:751-757, P. J. Snyder and R. D. Utiger, J Clin Endocrinol Metab 1972;34:380-385; and P. J. Snyder and R. D. Utiger, J Clin Endocrinol Metab 1972;34:1096-1098

of the subjects, the bolus administration of TRH is not accompanied by serious side effects. A post injection serum sample is drawn at 30 minutes and, optionally, at 60 minutes for repeat measurements of TSH or prolactin or both. Since the cost of single radioimmunoassays of TSH and prolactin by clinical laboratories generally ranges between $30 and $45, the cost of the entire test will range from $100 where a single post-TRH sample is measured for a single hormone to $250 or more where both 30 and 60 minute samples are collected for more than one pituitary hormone.

Use of the TRH Test in the Diagnosis of Primary Thyroid Disease

In applying the test for the detection of primary thyroid disease measurement of basal and 30 minute serum samples for TSH is usually sufficient. The TRH test should be viewed as a second line test for conditions such as hyperthyroidism and hypothyroidism. The first line tests should be the serum T_4, to assess total circulating thyroxine concentration, and the T_3 resin uptake, to assess the degree of saturation of the thyroid binding proteins in serum. The free thyroxine index, derived by multiplying the serum T_4 by the T_3 resin uptake, correlates well in most situations with actual levels of unbound, biologically active T_4 in the circulation. These two tests, together with the calculated free thyroxine index, are available at a cost of $15 to $25 from most laboratories. In an ambulatory population of patients not suffering from malnutrition or other serious supervening illnesses the free thyroxine index can correctly diagnose hyperthyroidism or hypothyroidism in over 90% of cases.

Indications for the TRH Test in Suspected Hyperthyroidism

The TSH response to TRH is characteristically abolished or markedly suppressed in primary hyperthyroidism, whether the underlying cause is Graves' disease, toxic multinodular goiter, toxic adenoma, subacute thyroiditis or ingestion of excessive thyroid hormone. Usually the serum T_4, free thyroxine index or serum T_3 by radioimmunoassay will be clearly elevated so that measurements of TSH responsiveness will not be required. The greatest value of the TRH test is in borderline or mild cases where there are clinical signs or symptoms suggesting thyrotoxicosis but where measurements of circulating thyroid hormones f within the normal range.

Situations such as these occur most frequently in elder patients having predominantly cardiovascular complaint Typically there is coexistent hypertensive or atheroscler tic heart disease that may predispose the patient to tachya rhythmias. It has been proposed that even increases thyroid hormone concentrations within the normal ran may be sufficient to trigger atrial arrhythmias in susceptib people. Forfar has reported a small series of four patien with persistent atrial fibrillation who had an absent TS response to TRH in spite of normal serum levels of T_4 an T_3. Three of the four had autonomously functioning thyroi nodules on thyroid scan. In all four patients the atri fibrillation could be converted to sinus rhythm only aft specific antithyroid therapy was given to lower thyroi hormone levels sufficiently to allow a return of the norm TSH response to TRH.[6] In addition to its utility in identify ing situations where thyroid hormone excess may be co tributing to unexplained atrial fibrillation, the TRH te may be helpful in identifying mild thyrotoxicosis in p tients with debilitating illnesses where changes in bindin proteins or other factors such as drugs may produce a fall i total thyroid hormone concentrations.

While a normal response of TSH to TRH in suspecte hyperthyroidism effectively rules out the diagnosis, a dimi nished or absent response is not, by itself, adequate evi dence for a positive diagnosis. There are a number o thyroid conditions in which thyroid hormones may be pro duced independently of TSH control, but where insuffi cient hormone is produced to cause clinical thyrotoxicosis Examples of such conditions include many cases of treate thyrotoxicosis, as well as untreated multinodular goiter an autonomously functioning thyroid nodules. If a patient ha minimal clinical evidence of thyrotoxicosis and has norma levels of circulating T^4 and T^3, yet has a suppressed TS response to TRH, an expectant course of management i usually justified with instructions to the patient to repor any new symptoms suggestive of thyrotoxicosis.[2]

The TRH test has been proposed as useful in certain special situations encountered in patients with Graves' dis ease. In euthyroid patients with clinical exophthalmos, a subnormal response to TRH may be seen about one-third of the time.[7] Failure to respond to TRH in this case strongly suggests underlying Graves' disease, but a positive re-

sponse does not rule out Graves' disease as an etiology for the exophthalmos. In documented Graves' disease treated with antithyroid drugs to produce a euthyroid state, the TSH response to TRH has been examined as a prognostic indicator for prolonged remission after stopping drug therapy.[8] In this situation a normal TSH response several weeks after withdrawal of antithyroid drugs does have favorable prognostic significance. Such patients usually enjoy prolonged or permanent remission. However, a failure of TSH to respond to TRH does not necessarily imply that a relapse is imminent. Some patients will continue for months or years in a euthyroid state, but will continue to show a suppressed TSH response. Because of the limited conclusions that may be drawn, the TRH test is not recommended as a routine procedure in the evaluation of euthyroid patients with exophthalmos or in assessing the prognosis of treated patients with documented Graves' disease.

In addition to thyrotoxicosis it is now recognized that a number of nonthyroid disorders including renal failure, starvation, endogenous depression, Cushing's syndrome due to endogenous or exogenous glucocorticoids, and acromegaly may all be associated with a blunted TSH response.[3] While the mechanisms of these effects vary, all have the potential for causing interpretive errors when the TRH test is used to diagnose thyroid overactivity.

Indications for the TRH Test in Suspected Hypothyroidism

The TRH test is seldom indicated in diagnosing hypothyroidism. The vast majority of hypothyroid patients will have a clearly lowered free thyroxine index. Those with primary hypothyroidism will almost invariably have an elevated basal serum TSH. Indeed, the basal TSH usually rises to moderately elevated levels in conditions of limited thyroid reserve, before clinical thyroid insufficiency ensues. In primary hypothyroidism there is typically an exaggerated TSH response to TRH, but since the basal TSH is already elevated, measurement of the TRH response yields no critical additional information. In hypothyroidism secondary to pituitary disease TSH levels will fall in the normal or unmeasurable range. In this situation the TRH test can be helpful in further delineation of the lesion.

Use of the TRH Test in the Diagnosis of Pituitary Disease

The Assessment of Hypopituitarism

When TRH first became available as an agent for testing TSH secretory reserve it was expected that it would allow the differentiation of hypothalamic from pituitary lesions in patients with TSH deficiency. One would logically expect a diminished or absent response to be associated with destructive intrasellar lesions, while an intact response might be seen with hypothalamic lesions that spared the thyrotropes. Experience has shown that these predictions are only partially true. Primary hypothalamic lesions, particularly those seen with idiopathic hypopituitarism in children, are usually associated with a well-preserved but often delayed TSH response. Peak levels of TSH, instead of occurring at 15 to 30 minutes, frequently occur at 60 minutes. Unfortunately, patients with documented intrasellar tumors frequently show a similar response pattern.[2, 3, 9] In patients with near total destruction of the normal pituitary, as seen in Sheehan's syndrome or pituitary apoplexy, the TRH response will be markedly deficient or absent. This group of non-responders probably constitutes less than half of all patients with documented intrasellar lesions.[3] From a practical viewpoint, an absent TSH response to TRH in a patient who does not have hyperthyroidism strongly suggests an intrasellar lesion. A positive response, whether delayed or normal, cannot be interpreted to rule out an intrasellar lesion. In this situation appropriate tests to evaluate the secretion of other pituitary hormones together with CT scans or tomography of the sella and hypothalamus will be required to localize the lesion.[5, 9]

The Assessment of Hyperprolactinemia

Non-puerperal galactorrhea is a relatively common condition in women.[10, 11] In 10 to 50%, depending upon the series reported, there is hyperprolactinemia due to a prolactin-secreting pituitary adenoma. The incidence of adenoma increases in women who have amenorrhea or oligomenorrhea in addition to galactorrhea. The clinical features most helpful in identifying patients with prolactinomas have been the appearance of an abnormal sella turcica on polytomography or CT scanning, and the presence of elevated basal levels of prolactin. The higher the initial prolactin level, the greater the probability of tumor. Kleinberg found that all patients with prolactin concentrations above 300 ng/ml had tumors, while 50% of patients with concentrations above 100 ng/ml had tumors.[10]

Among patients with documented prolactin-secreting adenomas a blunted (less than 100% increase) or absent response of prolactin to TRH is frequently but not invariably present.[10, 11] Unfortunately, such a blunted response is not confined to patients with documented adenomas, but may also be seen in 10 to 30% of patients with other causes of hyperprolactinemia. The significant number of normal responses in tumor patients and blunted responses in patients without demonstrated tumors greatly limits the value of TRH in the differential diagnosis of hyperprolactinemia.

Women who present with galactorrhea or unexplained amenorrhea should have, in addition to a careful history and physical exam, measurement of basal serum prolactin, T_4 and TSH. Those with elevated serum prolactin levels or with other clinical features suggestive of hypothalamic or pituitary disease should also have polytomography and CT scanning of the sella. Measurement of the prolactin response to TRH may provide additional information of some predictive value, but the results of this test alone will not determine subsequent therapy. For this reason, most clinical endocrinologists do not include the TRH test in the routine evaluation of hyperprolactinemic states.

Paradoxical Responses of Hyperfunctioning Pituitary Tumors to TRH

Some patients with growth hormone[12] or ACTH-secreting pituitary tumors[13] will demonstrate a paradoxical increase in hormone secretion by the tumor in response to intravenous TRH. Up to 50% of acromegalics will show a rise of 100% or more in serum growth hormone levels after TRH. One hypothesis to explain this curious finding is the

existence of altered or "ectopic" receptors on the tumor cell. The paradoxical response seen in some acromegalics can be of therapeutic as well as diagnostic significance, since the same patients who have a positive growth hormone response to TRH also have suppression of growth hormone secretion after administration of dopaminergic drugs such as bromocriptine.[12]

Similarly, TRH does not stimulate ACTH secretion in normal subjects but it does so in some patients with Cushing's disease or Nelson's syndrome.[13] In some cases, administration of cyproheptadine, a serotonin blocker, has been reported to reduce plasma ACTH and cortisol levels with a concomitant loss of the paradoxical ACTH response to TRH.[13]

Summary

Synthetic TRH stimulates secretion of both TSH and prolactin in normal subjects and may be given easily and safely in an outpatient setting for purposes of testing pituitary TSH and prolactin reserve. Identification of abnormal results requires a knowledge of the range of normal responses in men and women according to age. The most frequently useful application of the TRH test is in identifying patients who may have mild thyrotoxicosis in spite of circulating thyroid hormone concentrations that fall within the normal range. TRH administration adds little or nothing to the measurement of basal levels of TSH in the diagnosis of mild primary hypothyroidism. In differentiating hypopituitarism due to destructive intrasellar lesions from that due to hypothalamic lesions, an absent or markedly blunted TSH and prolactin response to TRH strongly suggests pituitary destruction. A well-preserved response is compatible with either an intrasellar or a suprasellar lesion. The prolactin response to TRH is frequently blunted or absent in patients with prolactin-secreting pituitary adenomas but this finding is neither consistent nor specific evidence for this diagnosis among the several causes of hyperprolactinemia. Paradoxical secretory responses to TRH may be seen in pituitary tumors hypersecreting growth hormone or ACTH. In no case is the result of a TRH stimulation test essential to the correct diagnosis of a pituitary tumor. However, the information obtained from the assessment of pituitary responsiveness to TRH can be helpful in substantiating the diagnosis and occasionally in choosing appropriate therapy.

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Propranolol-Induced Hyperthyroxinemia

Warner M. Burch, M.D.

THE clinician is often confronted with interpreting laboratory data that are not consistent with the patient's clinical status. This is particularly so in assessing thyroid function studies. This is the story of a patient with propranolol-induced hyperthyroxinemia, a syndrome that can be confused with thyrotoxicosis.

A lady of 70 years was taking propranolol (Inderal) 40 mg three times a day for intermittent episodes of palpitations. In May 1982 T_4 (RIA) was 12 μg/dl (normal 4-12) and serum cholesterol was 217 mg/dl (normal 150-300). The propranolol was increased to 180 mg per day taken as 60 mg in the morning, 40 mg at lunch, 40 mg at supper and 40 mg at bedtime. She reported less palpitations.

Three months later her bowel pattern of one movement per day had changed to 2-3 movements per day, her appetite had decreased, and her weight had dropped seven pounds. A similar episode had occurred two to three years earlier and a barium enema had been normal. Her blood pressure was 120/78, pulse 78 and regular. Laboratory studies were normal except for a T_4 (RIA) of 14.1 μg/dl (normal 4-12); free thyroid index, 2.7 (normal 0.9-2.5); T_3 U, 53% (normal 38-58%); T_3 (RIA), 55 ng/dl (normal 75-200); serum TSH 3.1 μU/ml (normal < 6.5). The diagnosis of hyperthyroidism was suspected and a 24-hour thyroid I-131 uptake was obtained. A value of 47% was reported (normal up to 35%). A radionuclide scan showed the thyroid to be normal in size and configuration. Propranolol was increased to 80 mg four times a day. She was referred to Duke University Medical Center for further evaluation.

Her bowel movements had returned to normal without any specific therapy and she had gained weight as her appetite improved. She had had a couple of episodes of palpitations but no heat intolerance, no neck enlargement, and no increased nervousness. She was sleeping 6-7 hours per night. On physical examination no clinical evidence of hyperthyroidism was found. The thyroid gland was not enlarged. Laboratory studies included a serum TSH of 2.0 μU/ml. After receiving 500 μg of thyrotrophin-releasing hormone (TRH) IV, the serum TSH at 30 minutes was 9.7 μU/ml; T_3 (RIA) was 89 ng/ml (normal 110-230); T_3 U, 44% (normal 35-45%); T_4 (RIA), 10.8 (normal 5.5-11.5); and free thyroid index, 4.7 (normal 2.2-4.7).

The case history presented illustrates the challenge of separating facts necessary to discern the proper diagnosis from "noise." "Noise" is a term Dr. Eugene Stead uses to identify information or test results that tend to lead one astray in making decisions about patient management. As always, laboratory results need to be interpreted in light of the patient's clinical status.

Let us look at the clinical data. Our seventy-year-old lady with palpitations on propranolol presented with a change in bowel habits, which is most consistent with an irritable bowel syndrome. She had had a history of this disorder and mucous-laden stools. However, she had lost 7 lbs associated with a poor appetite. A screening panel of serum chemistries identified a T_4 of 14.1 μg/dl which was definitely elevated. Several thyroid studies were then obtained including a repeat T_4 as well as an elevated 24-hour I-131 thyroid uptake. The diagnosis of hyperthyroidism was suspected and she was referred for consultation.

There were several factors making the diagnosis of hyperthyroidism unlikely. First, there was no history of nervousness, anxiety, heat intolerance, or sleep disorder, but these symptoms might have been masked by propranolol. Second, there was no thyroid enlargement or nodule(s). Hyperthyroidism without a goiter or nodular thyroid is unusual. In fact, > 97% of patients with Graves' disease will have a goiter.[1] However, hyperthyroid patients without a goiter can be seen with subacute thyroiditis or thyrotoxicosis factitia. These patients have no or very low 24-hour I-131 thyroid uptake (<5%). Third, although the serum T_4 (RIA) was elevated, the serum T_3 (RIA) was low. Most (95% +) hyperthyroid patients have serum T_3s that are elevated in greater proportion than the serum T_4.[2] Fourth, she was taking propranolol, a medication known to lower serum T_3 by blocking the conversion of T_4 to T_3.[3, 4] The exact mechanism of propranolol blocking the conversion of T_4 to T_3 is not understood, Again, an important piece of information was that on two different occasions this patient's serum T_3 (RIA) was low.

In most euthyroid patients who are taking propranolol the serum T_4 is normal.[5] However, an occasional patient may have an elevated T_4.[6, 7] The serum T_4 in this patient was at the upper limits of normal at 12 μg/dl in May of 1982. Increasing the propranolol dose led to an increase in the serum T_4 to 14.1 μg/dl which had returned to normal by her last exam. Because the laboratory data suggested hyperthyroidism, a thyrotrophin-releasing hormone (TRH) study was performed. In hyperthyroidism there is no rise in the serum TSH released by the pituitary when TRH is given. The TRH study was normal in this patient confirm-

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ing that the pituitary gland interpreted the T_4 levels as normal. The TRH study is a convenient office method to assess possible hyperthyroid states. TRH (protirelin) 500 μg is given intravenously with measurement of serum TSH at 0 and 30 minutes. A normal rise in TSH is at least 6 μU/ml in females and males under 40, and at least 2 μU/ml in males over 40.

This patient's elevated T_4 was most likely related to propranolol. She was definitely not hyperthyroid on her last exam and it is unlikely that she ever was. Since propranolol inhibits the conversion of T_4 to T_3, a low serum T_3 (RIA) was not unexpected. Hyperthyroxinemia secondary to propranolol may not be as rare as it is reported. Endocrinologists at Duke have seen two to three dozen patients on the cardiology wards with propranolol-induced hyperthyroxinemia. Recently Cooper et al.[8] reported 6 patients with elevated serum T_4s on high-dose propranolol therapy.

In this patient, the "noise" in the system was an elevated 24-hour thyroid uptake, which did not fit into her clinical picture. Her body stores of iodine may have been low, and thus the thyroid had a greater proportion of uptake of I-131 or there was a counting/calculation error in the percent uptake.

One should suspect propranolol-induced hyperthyroxinemia in any patient taking propranolol when the serum T_4 (RIA) is elevated and the serum T_3 (RIA) is low. If there any question about the diagnosis of hyperthyroidism, TRH study should be done.

Acknowledgment

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SCIENTIFIC ARTICLE

A Painful Swollen Arm in a Young Woman

Cynthia Mulrow, M.D. and G. Ralph Corey, M.D.

PRIMARY thrombosis of the deep veins in the upper extremities is uncommon, accounting for less than 2% of total cases of deep venous thrombosis.[1] Although venous thromboembolism has frequently been reported in association with oral contraceptives, in fewer than ten cases has the upper extremity been involved.[2-5]

Case Report

A 20-year-old white woman came for evaluation of recurrent arm swelling and pain. She had been in good health until six weeks earlier when she developed a small area of redness of her right upper arm, followed by swelling of her entire right upper extremity and fever to 99.8°F. A physician diagnosed "spider bite" but gave no medication. During the following week, several other physicians concurred with the diagnosis of spider bite, but one thought that she had cellulitis with axillary lymphadenopathy and started her on oral antibiotics. There was gradual improvement in her pain and swelling, but the arm did not return to normal size or consistency.

Because the pain, swelling and low-grade fever failed to resolve, she was hospitalized and treated with nine days of intravenous Cefamandole with some resolution of pain and swelling. The results of the evaluation included normal blood chemistries, blood count, chest x-ray, arm x-ray and gallium scan. She had taken birth control pills for 2½ years to regulate her menses; she was a cigarette smoker.

After two weeks, the patient was discharged on oral Tetracycline. She continued to have increased tightness in the arm with aching pain on exertion and she noticed an increased prominence of the veins over her upper right extremity and right anterior chest. Because of persistent symptoms, she was referred for further evaluation.

The physical examination was normal except for an increased right upper extremity circumference (25.3 cm compared with 24.7 on the left). There was increased turgor of the tissues of the right upper arm and some tenderness along the axillary vein and in the axilla itself. Superficial collateral veins were prominent over the right anterior chest wall (figure 1) but were normal on the left. The shoulder joint was normal as was the elbow joint. Adson's maneuver was negative.

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A venogram showed complete obstruction of the axillary and subclavian veins on the right (figure 2) with remarkable collateral circulation. The superior vena cava was patent. Treatment with intravenous Heparin followed by oral Warfarin produced no improvement in her clinical condition.

Discussion

Primary upper extremity thrombosis, also known as "effort thrombosis" or the Paget-Schroetter syndrome, is generally a disease of young men. The right arm is involved in two-thirds of cases and the thrombosis is bilateral in 2%. The inciting event may be strenuous exercise or unaccustomed activity, but approximately 25% of patients have no recognizable precipitating event.[6]

Our patient was a young woman on oral contraceptives

Figure 1. *Prominent collateral veins of right anterior chest wall.*

Figure 2. *Axillary and subclavian venogram illustrating obstruction and remarkable collateral circulation.*

who smoked but had no obvious inciting event. The association of oral contraceptives with thromboembolic complications is well known, however, and at least one study has suggested that smoking and oral contraceptives are additive risk factors.[7] Oral contraceptives may have served as a thrombogenic risk factor in our patient.

Proximal arm swelling, discomfort on use and prominence of engorged collateral veins are the most common findings in primary upper extremity thrombosis.[8] Palpable axillary cords, a tender axilla and unilateral breast swelling can sometimes be seen, and thoracic outlet syndrome with specific mechanical compression points is often found.[9] The diagnosis can often be made on the basis of symptoms and signs alone, but cellulitis, lymphangitis, intramuscular hematoma, arterial occlusion, lymphatic obstruction and reflex sympathetic dystrophy must be considered. A complete vascular, lymphatic, neurologic and soft tissue examination may differentiate patients presenting with a painful swollen arm, but final confirmation requires delineation of the deep venous system by a venogram.

Early therapy is associated with the most favorable results, which highlights the importance of early diagnosis. Bedrest, arm elevation and anticoagulation have been the mainstays of therapy. Unfortunately, this conservative treatment leaves 60-75% of patients with mild to moderate chronic or exertional symptoms. Early thrombectomy or streptokinase might improve outcome but no results of such treatments have yet been reported.

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Commentary

H. Newland Oldham, Jr., M.D.

Venous bypass grafting for chronic axillary vein thrombosis has received little attention in the surgical literature. Venous reconstruction in the lower extremities has been much less successful than arterial bypass surgery, perhaps because the low pressure and low flow characteristics of the venous system lead to a high rate of postoperative occlusion. Several investigators have successfully used the simultaneous creation of an A-V fistula in the affected extremity to increase flow and decrease occlusion rates.[1] To date this has only been attempted on the lower extremities and vena cavae. While it is reasonable to consider this type of surgery for patients with axillary vein thrombosis, lack of experience with this problem suggests that surgery should be reserved for patients with incapacitating symptoms.

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SCIENTIFIC ARTICLE

A Patient-Centered Medication Administration System

Georgia K. Lewis, R.N., M.S.N.

WHEN Nash General Hospital was just a mental image, hospital administrator Bryant T. Aldridge had the idea of a patient-centered medication administration system. As Nash General materialized into the first all-private room hospital in North Carolina, so did the innovative approach to medication administration.

Description of System

The goal of any medication administration system is to give the correct patient the correct medication, in the correct dosage, by the correct route of administration, and at the correct time. This is a basic principle taught to every nurse early in training. With an all private room hospital, the first part of this principle could be assured by having each patient's medications in his own room.

With the assistance of Frances Eason, R.N., who was Coordinator of Inservice Education at the time, Bryant Aldridge's concept was brought to fruition. In each patient's room, there is a small locked drawer in which that patient's medications are kept and from which they are administered by the nurse. The hospital uses a modified unit dose medication system which assures that the correct medication is dispensed to the correct patient's medication drawer by the Pharmacy. With modern packaging techniques, practically all oral and injectable medications may be safely stored in the medication drawer without refrigeration. Those intravenous medications that need refrigeration are generally dispensed by the nurses on the Intravenous Therapy Team. Certain controlled drugs are dispensed only for a twenty-four hour supply in accordance with Food and Drug Administration regulations. Narcotics and hypnotics are excluded from the medication drawer and are stored in a central medication room.

The nurse who is assigned to the patient has a key to the medication drawer and is accountable for those medications and their appropriate administration. The registered nurse team leader also has a key and assists in administering standing and P.R.N. medications as indicated. The nurse uses a medication administration record, which indicates the physician's orders for standing and P.R.N. medications, when administering the patient's medications. This record is designed for a seven-day period and is used to chart the date and time the medication is administered and by which nurse. While current, the record is kept in a file along with the nurse's notes and plan of care. At the end of the week, the record is incorporated as a permanent part of the patient's medical record.

From Nash General Hospital, Inc., Curtis Ellis Drive, Rocky Mount, NC 27801.

Response to the New System

This approach to medication administration was totally new for the nurses who opened Nash General Hospital. They had been accustomed to a centralized system with individual cards for each medication and "passing medication by trays." Cards were lost or misplaced frequently and the possibility of medication errors was fairly high. Once oriented to the new system the nurses loved it! Not only was it patient-oriented, but it was also nurse-oriented. Rather than being closed up in a medication room "pouring medications," the nurse was at the patient's bedside, obtaining the medication from the medication drawer, administering it, and charting it, all while in the patient's own room! This approach opened up avenues for patient and family education about prescribed medications and gave the patients a very real sense of security about getting their correct medications. It also meant the nurses spent more time with their patients and less time in a medication room or at the desk charting.

At first, feelings of the medical staff toward this new system were mixed, but several physicians have commented since, "I'm glad to see the nurse with my patients more and less at the desk." They appreciate what this system has meant to patients and nurses alike, and physicians such as Dr. J. R. Chambliss, who is currently Director of Medical Education, have given their full support. Several of the physicians use the medication administration records while making their rounds and have found them to be a helpful tool in determining quickly the standing and P.R.N. medications the patient is receiving without having to thumb through pages of physician's orders.

Orienting new nurses to the system is extremely easy, and many have commented that it is the best system with which they have worked. With Nash General affiliating with three schools of nursing, nursing students are in the hospital each day. When using a centralized medication system, such as a medication cart with a medication nurse, there frequently is a bottleneck in giving the student ample experience learning to give medications. With our patient-

oriented medication system, the student who is assigned a specific patient can give that patient's medications under the supervision of the clinical instructor without interfering with the staff nurse's responsibilities. Instructors and students alike praise our system.

Simplicity of the System

For those of you who are thinking this system may be expensive and difficult to install, please be assured of its simplicity. You do not need an expensive "nurse server" in order to incorporate this system in your hospital. You do not even need all private rooms. If you have the space of a small locked drawer, such as in a bedside table, or a small box that can be mounted on the wall by the patient's bed, you can develop a similar system. Nash General has even incorporated this system in the medical-surgical intensive care unit, which is an open-type unit, by placing the medications in a locked drawer in the patient's bedside module and it works equally well.

Quality Assurance

Since Nash General began using this medication system, we have audited its performance through retrospecti monitoring of all reported medication errors. The inciden of errors is extremely small in comparison with the volur of medications administered. It is considerably lower th the rate experienced with the centralized medication syste formerly used. The relationship between pharmacy se vices and nursing services has also played an important ro in quality medication administration. A specific pharmac is assigned as a liaison person to work with the nur clinician on each nursing unit. Communications and pro lem-solving are definitely enhanced by this approach.

Future Applications

Nash General will continue to modify and update i system of medication administration. It will be quite easy move to a total unit dose system by using interchangeab medicine drawer liners which the Pharmacy will repleni each twenty-four hours. With emphasis on early dischar planning, we expect selected patients to be able to take the own medications from their medication drawer while st in the hospital setting, much as they would do at home. certainly is exciting to think and plan for those futur innovations!

Some Non-Caustic Remarks About Bleach

Ronald B. Mack, M.D.

I must admit that I have not washed clothes since boot camp (during the War of Northern Aggression or was it the war that was in all the magazines?); however, almost all of my inquiries regarding the use of bleach reveals that very few "clean" homes lack this product to clean clothes and/or the bathroom. It is therefore not surprising that the ingestion of household bleach is a fairly common experience for pre-school investigators. What is surprising is that some controversy still exists concerning the management of bleach ingestion; after all, this is not a new product and experience with it in a toxicological sense is vast. The controversy, in my experience, exists between the "trench doctors" like us and some of our surgical specialty colleagues.

Before management of household bleach ingestion is discussed, let us define our terms: we are referring here to the common household liquid bleaches — usually 3 to 6% solutions of sodium hypochlorite in water — such as Clorox, Linco, etc. These chemicals are certainly the most widely available and used bleaches in our country and have an average pH of a bit over 11. It is fairly well established that non-lye solutions require a pH of 12.5 to 13.5 to cause esophageal ulceration. Commercial lye solutions such as Drano, Liquid Plumber and the like have a pH of 14 and are very caustic to the esophagus. Apparently the critical pH required to produce esophageal ulceration is approximately 12.5.

The liquid chlorine bleaches that we are speaking about are almost always not going to "burn" the oropharynx and esophagus enough to require anything more than minimal care. The patient, if verbal, will complain of a burning sensation in the mouth and throat. Emesis usually ensues spontaneously as hypochlorite bleaches are very powerful emetics. It has been stated repeatedly in the literature that hypochlorite ingestion does not usually cause serious or permanent injury to the esophagus and perforation or stricture formation is quite remote. Furthermore, pre-school children usually ingest relatively small quantities of bleach when they do indulge — not more than several swallows, with each swallow for a pre-school child equal to 4 or 5 ml (0.21 ml/kg = 1 swallow).

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For pre-school children who accidently ingest common household bleach such as Clorox, Linco, etc. in the usual concentrations of sodium hypochlorite, who do not present with profound drooling or bloody vomitus, and who have not swallowed mega quantities (all of which are very uncommon in my experience), the treatment is simple: (1) no emesis or lavage is necessary, (2) milk or water can be given as diluents and/or demulcents, (3) no esophagoscopy, (4) no corticosteroids, (5) no antibiotics, and (6) no acid antidotes to neutralize the alkaline substance. This can create a dangerous exothermic reaction and must be avoided.

The point to remember here is that chlorine bleaches are more or less dangerous depending on the pH of the solution. In the ideal situation, emergency departments would have on hand equipment to measure the pH of potential toxins. The most accurate tool is a pH meter. Short of that, pH paper could be used, but not the standard nitrazine paper which has too narrow a pH range to be useful in evaluating caustic agents. A pH paper with a range of 1-12 and also pH paper with an extended range of 12-14 are much more useful.

Under certain circumstances household bleaches such as have been discussed can be very troublesome and dangerous. Bleach in the eye can be quite irritating and intense; immediate flushing with water is helpful. Chlorine bleaches are sometimes mixed by housecleaners with other cleansers to achieve a more perfect product but often end up with a very toxic mixture, e.g., mixing chlorine bleach with a strongly acidic product like a toilet bowl cleaner or rust remover can result in the production of hypochlorous acid or chlorine gas. Mixing hypochlorite bleaches with disinfectants containing ammonia or with plain household ammonia can lead to the production of chloramine gas. Mixing liquid dishwashing detergents with hypochlorite can produce either or both of these gases. These gases can cause intense pulmonary irritation especially if inhaled when the patient is in a small, poorly ventilated area.

My mother, my wife and my daughter have indulged me terribly and I probably will never know the wonderful things that bleach can do (I hope!!).

[The membership should be advised that the retail outlets of the Majik Market, Quik-Chek and Fast Fare companies have graciously agreed to stock syrup of ipecac in all of their North Carolina convenience stores so that ipecac can be obtained more readily during the dark hours.]

Physician Intervention for Disadvantaged May Protect Fee-for-Service System

W. E. Roye

MANY forces in North Carolina today are combining to threaten health care delivery to the poor and disadvantaged. The recent conservative swing in Washington is but one major influence.

Hospital management, physicians, and the business community are all reacting to new pressures and opportunities to achieve competitive advantages. These concurrent actions are not parallel, yet they collectively have a detrimental effect upon health care to the poor.

Serious impairment to health care for the disadvantaged can only result in greater regulatory intrusion into medical practice. Immediate physician intervention is essential to direct the outcome of these trends while preserving the fine health delivery system we enjoy today.

Converging Trends

Federal Actions

There is no clear picture of the results of federal actions on the shape of America's health care system in the future. The federal government is trying to reduce expenditures for Medicare and Medicaid (65% federal monies in North Carolina) without reducing benefits. To do so, number 64 Beaver scalpels are used. Health and Human Services (HHS) bureaucrats fortunately are not entrusted with cleavers.

Last year's Tax Equity and Fiscal Responsibility Act is a prime example of exsanguination by multiple small wounds. This massive and sometimes contradictory legislation

1. removed the 5% nursing differential for Medicare patients;
2. expanded cost limits to ancillary services;
3. instituted case mix reimbursement based upon diagnostic related groups;
4. reimbursed hospital based physicians at only 80% of charges;
5. encouraged private sector peer review (which may or may not be part of the PSRO).

With the federal government facing mounting deficits, these reductions are not expected to moderate in the next few years. Senator Robert Dole (R-KA) has indicated that Congress will seek to cut an additional $6.5 billion in health spending this year. The federalization of state Medicaid programs with all of their varying differences in levels of services must be viewed with some skepticism given today's climate.

Consider a worst case scenario. As reductions continue there will come a time when federal reimbursement becomes so low that physicians and hospitals can no longer participate in Medicare. When that point is reached, no elected official would be directly involved in the decision, and the media will only report that local providers no longer accept federally sponsored patients. HHS spokesmen in Washington will term these actions "shocking."

This trend of paying less for more services will continue until significant numbers of hospitals fail or until large numbers of Medicare and Medicaid patients are denied services. Nothing short of these drastic results is likely to cause a change in federal policy.

Hospitals Seek to Augment Revenues

Presently the federal government continues to cut reimbursement for health services to see how the private sector reacts. This strategy is working well. The hospital industry is scrambling to seek means to offset the loss of federal reimbursement while trying to maintain existing levels of service.

Last July the North Carolina Hospital Association's Council on Hospital Governance distributed a detailed statement of the problem to every member institution's board chairman. That message was that hospitals can no longer sustain today's levels of service if they rely upon patient revenues alone. Hospitals of all sizes were encouraged to investigate a variety of multi-institutional arrangements to achieve economies of scale and to share scarce resources. Corporate reorganization was promoted and has already begun in several North Carolina hospitals. Such reorganization may create dependent or independent foundations to protect a hospital's assets from the Internal Revenue Service.

A more advanced form of corporate reorganization is the parent holding company (PHC) model. In such designs, the PHC controls both a non-profit health related division and profit making enterprises that subsidize the health care activities. These profit-making portions may or may not be related to the hospital's mission. The PHC could run retail

From the North Carolina Hospital Association, 112 Cox Avenue, Raleigh, NC 27605.

outlets, real estate investments or manufacturing operations. The purchase of the Mueller Noodle Company in the 1940s by the New York University Law School is a classic example of a non-profit institution benefiting from a separate business. Macaroni sales boosted NYU's Law School from relative obscurity to a nationally recognized program attracting the very best in faculty and students.

Non-traditional outreach programs are also being considered by hospitals. Chemical and substance abuse programs are springing up. Shopping mall health-screening programs and health promotional efforts are being tried. Efforts to protect market shares from both competing physicians and other institutions include a variety of satellite clinics. The next few years will see hospitals marketing services directly to local business employers. As health benefit management becomes a greater problem and the tax free status of health insurance premiums is threatened, hospitals will compete directly with area PSROs to do utilization studies for local companies.

North Carolina hospitals continue to shift the cost deficits created by federally sponsored patients and the indigent to other patients. Approximately 40% of the patients in acute care beds are Medicare or Medicaid. An additional 10% of the patients are medically indigent (that is, incomes above the Medicaid allowance). Therefore, one-half of the hospital's patients generate less than cost for the care they receive. Some pay nothing. Increased cost-shifting recently resulted in large premium increases by commercial third-party carriers and Blue Cross. Cost-shifting contributed to the State of North Carolina dropping Blue Cross coverage and becoming self-insured. Cost-shifting may force private carriers out of the health insurance business altogether.

Hospital cost-shifting has been around since the institutions were first organized. What is new is the magnitude of the problem. This may be the primary factor in arousing business interests to change the health care system.

Physicians Consider Entrepreneurial Alternatives

The Chapel Hill Area Health Education Center predicts a statewide increase from 7,000 physicians in 1980 to 14,000 in the year 2000, exclusive of teaching and research physicians. There is debate whether or not the nation is heading for an over-supply of physicians. A few facts have emerged, however. Most notable was the AMA's successful lobbying to have the preferred immigration status removed from foreign trained physicians. Some North Carolina physicians are beginning to talk about making the state less attractive (i.e., more difficult to open a practice) to out-of-state doctors. A medical school spokesman claims that the four state medical schools are producing the proper number of graduates, and if there is a problem of oversupply, it is because of the influx of out-of-state practitioners.

The quarterly North Carolina Certificate-of-Need Project Report is becoming interesting reading. A growing number of physician-run, freestanding units are being built and planned. For example, a hand clinic is opening in Asheville, a birthing center in Burlington, and numerous trauma and day surgical centers in various locations. These units are being encouraged by Blue Shield's recent plan reimbursing physicians' full charges for limited ambulatory procedures and only 80% of charges when patients are admitted to the hospital. Other carriers will surely follow i this reduces Blue Shield's claims experience.

More intense marketing struggles are coming. With th exception of the successful Reynolds Health Maintenanc Organization (HMO) in Winston-Salem, alternative form of health care delivery have been slow developing in Nort Carolina. IBM's decision to join the Blue Cross sponsore Independent Practice Association (IPA) in the Researc Triangle may be the turning point for that plan. Certainl having more new physicians trying to establish practice will make staffing of any future IPA or HMO easier.

Square D's letter to its Raleigh area employees urgin them to avoid using Wake Medical Center due to costs ha dual implications. First, it may signal a movement in th state toward the preferred provider organization (PPO). Second, it implies that major employers may be prepared t take definitive action to control their health benefit costs.

PPOs are less complicated to get started than HMOs i that the traditional fee-for-service arrangements and insurance coverages are not disturbed. A local group of providers (doctors and a hospital) will discount services to member companies in return for an assured patient volume and rapid claims payment. Patients choosing to utilize non-preferred providers have to pay the difference in cost themselves. There is no capitation payment. PPO physicians tend to exclude peers with records of high hospital utilization and to self-impose stringent utilization reviews. Blue Cross of Virginia is considering sponsoring PPOs in Richmond and Norfolk this year.

Business Begins to Act

Traditionally, business has regarded the health insurance premium as a fixed cost over which they had little control. Recently, companies acting independently and in concert with others have taken positive actions to cut benefit expenses. In Florida, Pratt and Whitney hired a physician to review employee claims, seek out low cost providers, recommend ambulatory procedures, and "counsel" employees with a high incidence of hospital admissions. Within a year this program brought area physician fees in line as high cost practitioners found that they were not getting Pratt and Whitney patients. The company experienced a dramatic drop in health related claims. This sort of activity can occur in any community with a large employer.

The business coalition movement is being encouraged from many sides. The Business Roundtable in Washington, the American Medical Association, the American Hospital Association, and organized labor have all endorsed the concept. A problem with local business coalitions is that when they achieve sufficient power to affect physician practices, hospital planning, and employee habits, they then assume some decided anti-trust characteristics: division of the market, boycotts, and other anti-competitive practices. Attorneys foresee anti-trust law suits against business coalitions by provider plaintiffs.

In North Carolina the coalition movement is slow in developing. Three county medical societies with full time staffs (Mecklenburg, Forsyth, Guilford) have initiated local business coalitions. Forsyth is more advanced in that several major businesses in Winston-Salem are contracting with the local PSRO to do private utilization review. The

other seven PSROs have had limited success in securing business contracts. Coalitions are being organized by Burlington Industries and are underway in Hickory and Wilson.

Wilson is the best example of the sudden impact a local business group can have. There the coalition, led by an architect, became concerned about the apparent unwarranted hospital utilization. As a result of discussions between the coalition and the medical community, the hospital's census dropped significantly and the institution resubmitted its budget for a rare midyear rate adjustment. Hospital expansion plans were tabled. The Wilson experience should not be considered unique. Wide variations in hospital utilization due to physician practice patterns leave many North Carolina communities subject to the same series of events.

Business people throughout the state are learning that through aggressive action health care costs can be controlled without sacrificing quality.

New Bed-Fellows Pose Threat

Since the demise of the federal Hill-Burton program to fund hospital construction in 1976, the nation's private health care institutions have increasingly turned to tax free revenue bonds for major capital improvements. A hospital with a large bond issue to be repaid over 20 years then acquires a long-term financial obligation and a corresponding reduction in self determination. Wilson et al. pointed out last year in the *New England Journal of Medicine* that bond investors, investment firms and banks now have a pecuniary interest in hospitals with bonds and have become influencers of hospital policy — in essence new management bed-fellows for the period of the bond. The bond trustee, usually a bank, must take whatever action is necessary to protect the bonds, either in concert with the hospital board or unilaterally. Bond retirement is based on projections of continued high occupancy of 80% and annual increases in room rates of 10 to 17%.[1] The borrowing hospital therefore enters into a long-term contract that requires the maintenance of a high, privately insured census and a steady increase in rates.

The problem down the road may be the financial crunch that can result from a decrease of census or an increase in cost-based and indigent patients. The hospital then must face an uphill battle against all of the trends tending to decrease inpatient utilization while at the same time attempting to limit services to federally sponsored patients and the poor. All of this may be necessary to meet the bond payment schedules.

In North Carolina there are 23 bond issues in the private nonprofit sector with a total face value of $276,775,000. As of November 1982, the total debt remaining was $256,013,497.

Since 1977 some significant bonds have been issued: Presbyterian Hospital, $20 million; Rex Hospital, $31 million; Duke University Hospital, $86.9 million; Memorial Mission Hospital, $35 million; Moore Memorial Hospital, $10.7 million; and Scotland Memorial Hospital, $10.8 million.

On the public side, forty-three county and municipal hospitals have numerous bonds outstanding with a total unpaid debt of $248,584,400 as of June 30, 1982. The vast majority of these bonds are general obligation issues in that the county government stands behind the bonds. Nevertheless, the impact upon the hospital is the same. The county still expects the hospital to generate all of the funds necessary to meet the bond payment schedules.

Some counties with large public hospital debts in North Carolina are: Durham, $15.5 million; Forsyth, $11.2 million; Mecklenburg, $15.2 million; New Hanover, $9.8 million; Union, $14.6 million; and Wake, $67.7 million (revenue bonds).

This significant debt throughout the nonprofit hospital industry in North Carolina will continue to influence hospital charges and operating policies for years to come.

Implications of These Trends

Even in a paper about the poor they are mentioned last. It is imperative to remember two things about the disadvantaged. First, the numbers of medically indigent will grow. Continued high unemployment, hospital costs rising at about twice the rate of inflation, and a Medicaid eligibility limit of less than $5,000 for a family of four insure a large number of North Carolina citizens who cannot afford traditional inpatient health care. Secondly, the problem and the response to the problem will not be uniform across the state.

Business will become a more sophisticated purchaser of health care. Employee utilization, particularly of acute inpatient services, will decrease. Hospitals will experience a drop in the charge-paying patient population, resulting in a smaller group bearing the cost-shifting burden.

Both hospitals and physicians will compete for charge-paying patients — the hospital by seeking non-traditional avenues of service, and the physician by "peeling off" services from the hospital into the office setting. Hospitals find it difficult to be vocal about "peeling off" since the same services in the physician's office tend to be less costly. In addition, more insurance payors will encourage outpatient care. The hospital may be left holding the high overhead bag with an ever smaller proportion of privately insured patients. With reduction of short-stay surgical cases, normal deliveries and diagnostic workups, the hospital will experience the following: a drop in census, an increase in the cost per case, an increase in the average length of stay, a lessened need for new beds, and the need for a staffing pattern richer in RNs. Institutional survival may depend upon keeping down the level of cost based on indigent patients and maintaining as many charge paying patients as possible. This proliferation of competitive activity among providers is primarily aimed at the increasingly essential charge-paying patients and not toward the indigent.

About half the short-term acute hospitals in North Carolina are county or municipally controlled. The degree of governmental support varies from significant to nil. The same may be said of governmental involvement in hospital management. These hospitals will assume a greater share of indigent care in the future. Some may become institutions of last resort. The possibility of a dual system, one for private patients and one for public, becomes increasingly plausible. As more indigent come to county hospitals, these

institutions become less attractive to both charge paying patients and physicians. New Medicaid reimbursement plans accelerate this trend in setting patient day limits at high cost hospitals while retaining unlimited days at smaller community hospitals. As charge paying patients drift away from county hospitals, local government is saddled with a growing financial burden. In many areas investor-owned chains are marketing their services directly to county commissioners. These companies will change the local hospital from a tax burden to an addition to the county's tax base.

Some Bright Spots

The Program on Access to Health Care funded by three North Carolina foundations is seeking a better means to provide health care to the disadvantaged. The Program has assisted with funding emergency room physicians, patient surrogate programs, home health plans and clinics serving the underprivileged. These activities continue and the foundation consortium is eager for new projects to provide primary care to the poor.*

The Home Services Screening Program conducted by the North Carolina Department of Social Services funds screening and evaluation programs for patients entering long-term care facilities. The patient's health needs, physical and emotional state, and home environment are assessed in an effort to match local resources and avoid institutionalization when possible.†

But All I Want to Do Is Practice Medicine

It is clear that the continued provision of quality health care to all North Carolinians is dependent upon prompt and responsible intervention. The following are suggested actions for physicians.

Recommendation 1

The physician must take an active, vocal role in county government to guide and shape local health care decisions. Quality care to the poor will require creative solutions and sacrifices.

"Alternative delivery systems are being designed by non-M.D.s. Why can't physicians develop a system and say 'Come down to our county and try this,'" asks James Johnson, Senior Analyst in the Human Resources Division of Fiscal Research.‡ "North Carolina doctors have a good history of leadership. Certainly the infant mortality fight is a good example of their efforts. The message to physicians out there is that there are problems in the medical care business — technology, rising costs, rate of change, to name a few. If they don't make some of these decisions, others will."

County Commissioners do not yet view health care for the disadvantaged as a priority issue, according to the Institute of Government staff.§

"The key in this matter is to get local medical societies working more closely with county commissioners," says John Syria, director of the Department of Social Services. "Physicians must see that the county commissioners appoint someone credible and competent to identify the magnitude of the problem and then devise ways to meet it."

Recommendation 2

The physician needs to be more familiar with individual and agency resources to assist in providing health care t the disadvantaged.

"Physicians for the most part don't realize how man varied programs and people are working on the same prob lem in a given county," insists Syria. "Some are in th county health department programs (and I know old stig mas remain about that) as well as private resources."

Recommendation 3

Physicians must articulate the need for non-existen assistance for the disadvantaged. The physician must us his stature in the community to emphasize to appropriat groups what needs to be done. Churches, civic clubs an volunteer groups of all kinds welcome needed area project that will show visible results. The recent rapid advances o the hospice movement in North Carolina is a prime exam ple.

Recommendation 4

Medical leaders and educators in the state's medica centers need to act on these same recommendations but on a different scale. Personal contact with members of the General Assembly is superior to letters or calls. The Medi cal Society can identify the most appropriate individuals to contact. Medical center administrators and educators have greater visibility which they must use to influence state policy makers. They must also be more aware of events and pressures in the communities comprising their referral system and be willing to intervene.

The Results of Inaction

A host of complex trends are combining to threaten health care to the poor. Practicing physicians are the most effective means of reversing this course. Without action, a dual class health system will result.

If this dual class of health care evolves, with a great disparity between health care available to the private patient and that offered to the public patient, a societal outcry will occur. People today will not accept too great a difference, and the federal sector will be forced to respond. Future federal programs aimed at the acute care needs of the poor will never again buy services from the private sector. This new form of government medicine then becomes a threat to the traditional fee-for-service medical care.

All who value the existing health care delivery system, even with its shortcomings, will act to see that this system meets the needs of all citizens. Should this fail, a very different form of federal intervention seems assured.

*Mr. Thomas R. Howerton, Director, Program on Access to Health Care, can be reached at 919/832-9550.

†Ms. Lillian Gaskill directs this program from the Division of Social Services, Department of Human Resources 919/733-3753. This effort is usually referred to by its legislative bill number, HB-405.

‡The Division of Fiscal Research is an arm of the General Assembly and staffs and performs studies for all appropriations committees.

§The Institute of Government in Chapel Hill conducts many educational programs for local elected officials.

References

1. Wilson G, Sheps CG, Oliver TR: Effects of hospital revenue bonds on hospital planning and operations. N Engl J Med 1982;307:1426-30.

Features for Patients

Practicing physicians and others in North Carolina interested in medical care are encouraged to write articles that will be useful to patients and to the many persons who work with doctors and hospitals. We are urging doctors to make the Journal available in their waiting rooms. Letters from all readers will be of interest to the editor and, when appropriate, will be published in the next available issue of the Journal.

What Does a Poison Control Center Do?

Shirley Osterhout, M.D.

The senior pediatric resident answers his poison control page with "May I help you?" to hear a puzzled, somewhat annoyed male voice stating that he really did not have an emergency in the true sense of the word, but a problem that needed solving right now. It seems that he had gone to considerable expense to landscape his entire yard, including sowing grass seed, and that the birds were thoroughly enjoying the seed. At the suggestion of the Farmers Exchange, he put out seed corn impregnated with strychnine. His neighbors were now complaining about dead birds in their yards. His problem for the Poison Center was, "How do I get up the corn in my yard without disturbing the grass seed?" Since those taking calls never leave a caller without some answer other than "I don't know," the resident called the Center's director who suggested renting a large vacuum cleaner similar to those used in parking lots and taking his chance with the grass seed. This information was given to the caller who thanked us saying, "I hated to bother you but I just didn't know who else to call."

That incident says a great deal about the Duke Poison Control Center. Since its inception in 1954 by Dr. Joy M. Arena from the Department of Pediatrics, the Center has grown in scope and in its ability to answer or assist in finding an answer to nearly 6,000 callers a year and 1,000 more who write or call the director personally. Since the Center was started (incidentally, the second one in the United States), its purpose has been and still remains to provide information on the treatment of acute and chronic exposure to poisons and on the prevention of poisoning. The learners were to be practitioners, house officers and students (medical and nursing), and non-professionals from whom it was anticipated calls also would come. Information was available 24 hours a day, seven days a week.

At that time, the information available on product ingredients and product toxicity was sparse. Much of the original material was researched by Dr. Arena and some of the pediatric residents by going to drug and grocery stores to copy labels. As additional interest in the Poison Control Center movement developed, the National Clearinghouse for Poison Control Centers was established within the Public Health Service of the Department of Health, Education and Welfare. With material from them in the form of 5" x 8" product information cards and bulletins and two textbooks, the Duke Poison Control Center began its operation — housed on a shelf over a large file cabinet in the pediatric resident's office. It was the function of the chief resident or his designate to answer what became a well-known page over the hospital loudspeaker, "One Four — Poison Control." There were 145 calls the first year.

Dr. Arena selected one resident to work closely with him in reviewing

the management of the cases, completing reporting cards for the National Clearinghouse and compiling statistics. I was one of those fortunate residents and I so enjoyed the experiences and the challenges that I never left.

In 1959 the Center moved to an entire file cabinet in a small treatment room in the emergency room. More information was rapidly becoming available through the National Clearinghouse and in textbooks. *Clinical Toxicology of Commercial Products* published by Williams and Wilkins in 1957, became the Bible of poison control centers. The Lange publication *Handbook of Poisoning* edited by Robert Dreisbach, continued to be the mind.

At the same time there were appearing on the market many more new drugs and household products resulting in an explosion of new and vital information from many sources: manufacturers, drug companies, textbooks, handbooks, journal articles as well as new journals devoted to only toxicology.

Over the years, the services of the Center became known by more people so that we became a major information source to many individuals and groups: medical and non-medical professionals, private and public. Interest by consumers in the influence of the environment on their daily lives encouraged us to become interested in these same problems, and we sought material that we could use to answer questions that might come to us regarding environmental issues.

A major source of information has always been the actual case which we record on a printed card. Each card from the very first is still on file and available as an information source as well as review material for students of epidemiology, public health, health policy, and investigators from the Food and Drug Administration.

The National Clearinghouse for Poison Control Centers was transferred from the Public Health Service to the FDA which took a more active role in the investigation of certain cases and products. We have always sent an individual report in each call to the FDA, giving them the basic information to do followups and reviews of products and patients.

In 1967 we were so established that two rooms, an office and a treatment room, were assigned us in the new emergency room, and in 1972 we hired a secretary for Poison Control only. When Duke Hospital North opened we moved into two offices on the Pediatric floor which is where we currently reside. We also hired full time and part time poison information specialists to replace the pediatric residents from 8:00 a.m. to 11:00 p.m. on week days and during selected weekend hours. We learned the value of computer technology and hired a computer programmer. The records of patients still remain on the reporting cards but can now be stored for rapid retrieval for statistical and epidemiologic studies.

The question we are most often asked is: What does a poison control center do? Our basic function is to provide information to anyone about exposure to known, suspected, or potentially poisonous substances. We are certainly fulfilling our primary objective. From a first year total of 145 calls, we progressed to 5,248 in 1981, involving 5,680 products. Although 1982 statistics are not available, calls to the Center nearly doubled after installation of a toll free number. We never refuse a call or say that we have no information. Sixty-four percent of our calls in 1981 came from the lay public. Most involved non-symptomatic or unrelated symptoms to material contacted by ingestion, inhalation, skin, eye or injection. Medical professionals (physicians, nurses, physician assistants, corpsmen, pharmacists, dentists, and veterinarians) made 34.7% of the calls. The majority of these cases were symptomatic, requiring treatment.

The calls remembered the best and longest are not the ones involving the child who takes too many vitamins or the drug overdose in a suicide attempt. If someone has a question about anything he has used or may contact or use, the Duke Poison Control Center will get that call. It can involve food, environmental hazard, drug reaction or interaction, effect on fetus or breast-fed infants, consumer complaint or inquiry, suspicion of deliberate poisoning, medical legal, insurance consultation, opinion from manufacturers on labeling, drug or food recalls, etc.

The calls that range from the sublime to the ridiculous most commonly involve food. It is not unusual nor unreasonable for the public to call if food has been contaminated with a foreign substance accidentally and the concern is truly about a potential hazard, but why would anyone call about the danger of eating a can of applesauce dated 1948, peas left in a refrigerator for four weeks and now covered with mold, sugar on which a rose petal has fallen, or a dead mouse in a newly opened container of syrup? The most memorable of all calls, and one that should have been made, involved a pig being barbecued by a group of Boy Scouts who used syringes with long needles to inject the sauce. This was to be an overnight task, and the pig was to be served as the main course to the boys and their families the next noon. As the sun came up, the sauce appeared black instead of red and several nibblers felt abdominal distress. The nearest quick food hamburger shop did a good business that noon because a potent acid barbecue sauce had been mixed in a zinc-coated bucket. Zinc was leached from the surface resulting in possible toxicity. On the back of that reporting card is a most delicious recipe for barbecue sauce, not to be kept in a zinc-coated container.

The possibility of plant poisoning accounts for most of our calls from families with very young children. The majority of plants are not toxic, and we discover that children are probably more hazardous to the

plants, especially those planned for indoor enjoyment. The greatest number of plant calls on which poisoning occurred involved teenagers and adults, such as the four young men who ate what were said mistakenly, to be peyote mushrooms and who required intensive care for renal failure, several episodes of teenagers who ingested poison weed containing atropine to achieve a quick non-illegal high in counties from the mountains to the sea, and the fraternity member at a well-known state school who called about his brothers who had not heeded his advice to drain and cook twice the poke leaves before they became poke salad and were now experiencing acute abdominal distress.

Some of the most difficult calls we get relate to the possible poisoning of animals. We've never discouraged animal calls since we considered North Carolina a rural state. Most calls involve cats and dogs who eat human medications or ingest insecticides, rodenticides and plants, but some involve humans who ingest animal medication, not only for small animals but for farm animals and fish. We've discussed the management of a possible aspiration pneumonia in a wheezing boa constrictor, the ingestion of newsprint (a possible feed poisoning) by a gigantic sequoias in a rare horse who ingested grass from a field contaminated with arsenic (cyanide) and a Dalmatian puppy, thoroughly stuck after playing with superglue. There was little we could do to help the farmer who lost 30 sows (and accidentally, as the farmer's wife swept organophosphate insecticide into the feed of four cows which then required atropine and resuscitation). I learned to really appreciate veterinarians after having one explain to me the bellows-like apparatus he prepared. The most time spent on an animal case involved a 1,000 pound mule which pulled the plow for a Rocky Mount farmer — his only source of livelihood. Unfortunately, this mule ate enough arsenic to become ill. The antidote, dimercaprol, is given on a milligram per kilogram basis and a 1,000 pound mule amounts to a total of 4 kilograms. It required many calls throughout North Carolina to find and send enough of the antidote to the concerned veterinarian to save the animal's life. Gastric lavage and activated charcoal work even on mules!

Working with the Poison Control Center for so long has been a constant learning process which I hope I have used wisely and well in the educational aspects of the Center. I have learned that tragedies in children and adults resulting from accidental poisoning can be prevented with a few minutes of education by health care professionals. Are patients told the hazards of medication on overdose? The families of three children hospitalized after ingesting at one time all the tranquilizers prescribed for bedwetting had never been told that the drug is toxic in overdose. One child died. In our experience, this is the exception when parents know that iron is poisonous in overdose. When you review 1,300 cases of ingested drugs for internal use and the reasons for the ingestion, as I did in 1981, the need for education by health care professionals becomes obvious. Are they themselves knowledgeable about all the potential hazards in our daily lives such as mouthwash or ingredients in combination with drugs like caffeine?

It has been interesting to observe the changes in the type of drug calls we have had. In the first six years of the Center, 38% of calls concerned internal medication. Since 1976 there has been an impressive decrease to approximately 26%. In 1981, 22% of all calls concerned drugs for internal use, a figure that parallels the national statistics. The major reason is felt to be the effectiveness of safety caps, since the law regarding child resistant containers was enacted in 1974. No physician should be persuaded by an adult's plea that safety caps are an inconvenience when prescribing for anyone in contact with young children. When I think about the importance of safety caps, I am always reminded of the younger-than-two-year-old who required resuscitation and long hospitalization when he took an overdose of an anti-diarrheal drug containing a narcotic, no child-resistant cap because the mother did not like them!

In the first six years of the Center, adult and children's flavored aspirin was responsible for 39% of all internal medicine ingestions. Following

the 1967 mandatary low regarding child-resistant aspirin cantainers, these cases dropped fram 28% in 1968 to 11% in 1971 In 1971, 59% of the odult aspirin ingestions were by persons over 14 years By 1981 only 6% af all internal medicatian overdoses invalved aspirin and most af those invalved either adults or children given overdoses by parents

The Duke Paisan Control Center takes great pride in the fact that the founder ond former director af the Center, Dr Arena, played a significant role in the development af safety caps far medications In the late 1940s, following the second death in ane week of children wha had taken an overdase of the newly flavored St Joseph's baby aspirin referred to as candy, Dr Arena called Mr Abe Plough af Plough Industries of Memphis, the manufacturer, and canvinced him that safety caps were needed to prevent these tragedies This baby aspirin was the first drug marketed with child-resistant caps — nearly 20 years before the law requiring such cantainers became effective

The decrease in the childhaod ingestions af aspirin cannot be related to the increase in the use of acetaminophen From 1964 ta 1975 we kept the statistics with adult aspirin, baby aspirin, and analgesic drugs (aspirin cambinatian and all athers) in separate categaries In 1975 it became necessary far better informational purposes to begin to subdivide the latter category and acetaminophen made the annual overdose statistics list far the first time, accounting for 12% af total analgesic drugs involved in overdoses In 1981 acetaminophen alane was the secand most frequent single praduct about which the Center was called This does not include the drug when combined with other drugs as an analgesic or as a cold and cough remedy Child-resistant caps an this praduct were nat required until 1979 In 1981, 55% of the acetaminophen calls were about persons over 10 years of age

POISON CONTROL CENTERS IN NORTH CAROLINA

Asheville

Paisan Contral Center
Memarial Mission Hospital
509 Biltmare Avenue
704/255-4660

Charlotte

Paisan Contral Center
Mercy Hospital
2001 Vail Avenue
704/379-5827

Durham

Paisan Cantrol Center
Duke University Medical Center
Box 3007
919/684-8111
1-800/672-1697

Greensbaro

Paisan Control Center
Moses Cane Hospital
1200 North Elm Street
919/379-4105

Hendersonville

Paisan Cantrol Center
Margaret R Pardee Hospital
Fleming Street
704/693-6522, extension 222

Hickory

Paisan Cantrol Center
Catawba Memarial Hospital
Fairgrave-Church Road
704/322-6649

Jacksanville

Paisan Cantral Center
Onslow Memarial Haspital
317 Western Boulevard
919/577-2345, extension 555

Wilmingtan

Paisan Cantral Center
New Hanover Memarial Hospital
2131 South 17th Street
919/343-7046

Most cammanly contacted products were the cholinesterase inhibitor insecticides, still a majar problem in North Carolina, as they have been since 1970 when DDT was removed from the market As a result of six deaths accurring within a four-week periad, we wrote an article on the hazards of this group of insecticides that brought us fame when it appeared on page one of *The New York Times*

Cleaning praducts are the majar general group about which we are called — soaps, detergents, salvents, acids, alkalis, etc that can clean anything from dishes and diapers ta automobiles and bricks Since 1960, the most common brand name praduct we are called about is Clorox bleach No single brand name of acetaminophen can top it!

There have been other changes through the years, but the most significant have occurred with the internal medications Have yau naticed the increasing number of brand name tranquilizers and antipsychotic drugs available? Although 84% af these drugs are taken by individuals over 10 years of age, they have replaced aspirin, lye, and petraleum distillates as the praducts that haspitalize the mast children

Since 1979 sedatives have dropped from secand place behind tranquilizers in the internal medicatian sectian af our statistics, being replaced by drugs far cold and cough and by vitamins and other dietary supplements Analgesics remain slightly ahead of tranquilizers Although cald and caugh remedies seem to be remaining steady in percentage af calls each year, it is interesting that vitamins and dietary supplements are increasing rapidly, as are diet pills Our statistics have a tendency to reflect natianal trends In 1974 gasoline cases soared due to siphoning Remember the gasoline crisis? Now we are interested in better dietary habits and staying fit

As a practicing pediatrician I have become concerned about the availability of self-treatment remedies that

can be obtained from health food centers. As a practitioner, I would not be as aware of the increasing use of these were it not for my Poison Control Center work. At this time we do not have a separate category for these products but we should have in the near future. They have a wide range of toxicity potential which is of concern to us as little information is available in the commonly used sources. We have augmented our information in various ways to be able to manage these cases appropriately.

One middle-aged woman was concerned about the safety of Devil's Root Claw which she had bought on a neighbor's recommendation for arthritis. Our caller believed in always reading the label and using as directed (a rarity in Poison Control work) and this product's labeling concerned her. It contains oxytocin which if taken under some circumstances could be dangerous. It is impressive to talk with people socially to discover that these "natural remedies," which could be potentially hazardous, are being used by adults and given to children in increasing quantities. We feel it is important enough to add another question to the history taking process.

This has only touched on "What does a Poison Control Center do?" Not mentioned are the strange bottles, peculiar powders and pills, dirty coins, and smelly liquids that are received in the mail for either analyzing or "what should I do with ___?" Not mentioned are our vigorous education programs which are available for the asking. This year we at last developed our own pamphlet "Poison At Work" through the efforts of Duke Medical Center's Department of Public Relations and Richard Drew, the assistant director of the Center. We also have an audio-slide-tape program designed for adult education by Mr. Drew and the Department of Audiovisual Education, both supported by a grant from the Triangle J Council of Governments. We also have an audio-slide-tape program purchased from the American Association of Poison Control Centers.

I used to say I would like to write a book using anecdotal material, funny and sad but all true, to help educate medical professionals and nonprofessionals on the prevention of poisoning. I was going to call it "One Four ___ Poison Control." Since I have been asked to write only an article, not a book, here is my condensed version.

The directors of the other seven Poison Control Centers in North Carolina were sent a copy of Dr. Osterhout's paper and invited to comment upon her experiences and their own. The article that follows is the only response that we received.

Mercy Hospital Poison Control Center

Jim H. Knowles, Pharm.D

Our operation is much different from that of Duke's Poison Control Center but the basic objective of service is the same: to provide first aid advice and information to the lay public, and treatment advice to medical personnel in cases of accidental or intentional poisonings. We have a similar philosophy of not giving an "I don't know" answer to any question, needless to say, our calls are not limited to poison information questions. We too get calls about many other subjects such as drug interactions, suicide prevention, drug abuse prevention, patient education, and proper storage of food.

Our center is a 24-hour, 7 day-a-week service. It is operated from the Pharmacy Department of Mercy Hospital between the hours of 7:00 a.m. and 11:00 p.m. (pharmacy operating hours). During these hours all calls are answered by staff pharmacists. After the pharmacy closes at 11:00 p.m., the calls are answered by the Emergency Room nurses and physicians until the pharmacy opens again at 7:00 a.m. The telephone number for the Poison Control Center is 704/379-5827.

The recent Tylenol/Cyanide situation has kept our center busy recently and has led into many areas of interest. One caller had received a sample bottle of Tylenol Extra Strength Capsules in a box of Tampons she had purchased. Her main concern was that all of the twelve count boxes of Tampons contained a sample bottle of the Extra Strength Tylenol and she did not want it. Our advice was to destroy the capsules in keeping with the recommendations of the FDA and McNeil Pharmaceutical Company. In a followup call to the store where the purchase was made, we found that the Tampons had already been removed from the shelf. The store was in the process of contacting the manufacturers of both Tylenol and Tampons for advice in returning the sample Tylenol Extra Strength Capsules.

Another unusual case was a child who ingested pellets from a catalytic converter. The child's father had opened it in order to use leaded gas in his GMC pickup. After calling all the General Motors dealerships in the Charlotte area, we weren't able to find the contents of a catalytic converter, but we did identify the manufacturer of the catalytic converter for GMC vehicles. Upon calling the manufacturer, we obtained the contents of the catalytic converters: pellets of platinum which act as a catalyst for conversion of exhaust gases to lesser polluting materials. These pellets should be non-reactive, unless leaded gas has been used before the pellets were removed from the converter. In this case, deposits of lead may be present that could possibly cause lead poisoning. Further conversation with the parent confirmed that leaded gas had been used. Therefore, for followup treatment, the child's physician was advised to look for abnormal lead levels.

Observations. Patient and Family Responsibilities At the University Medical Center

Judith M. Berr,

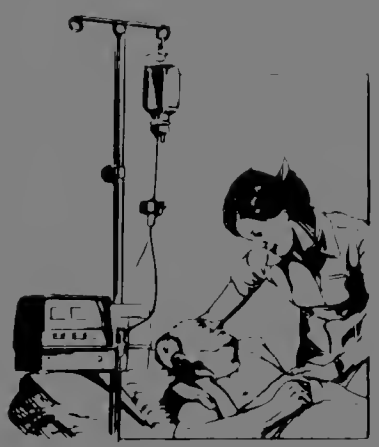
agnostic procedures can be begun. Be contacted at the time of discharge and be sent a written discharge summary as soon as possible.

It is easy for the medical staff to forget that what is routine for them is unknown and frightening to the patient. Because of sensitivity to the major focus of the medical center less concern is directed toward the emotional reaction to a stay on the CCU. My concept of equating the intensive care unit with dying is commonly held by patients and their families. The anxiety that comes from contemplating the possibility of death may interfere with the healing process. You may request that a chaplain, psychologist or psychiatrist be called to talk with the patient to provide support that the busy medical staff cannot provide. By talking to someone who is familiar with the hospital routine and the emotional reactions of patients faced with life-threatening disease, you will be reassured. In addition to reassuring you that your fears and anxieties are normal, these professionals can help explain the medical terminology and the hospital routine.

You should ask questions of the medical staff about procedures, hospital routine, etc. This includes questions to the attending physician. You must always remember that this is your disease or the disease of a family member and that you are paying for this care. Because you are most affected by the disease, you have the right and responsibility to understand the extent of your illness, your expectations for the future, medications and their side effects, and any medical or surgical procedures that are contemplated. Only by understanding the diagnosis and prescription for care can you properly assume responsibility for yourself when you leave the hospital setting. Most medical personnel can explain medical terminology in a way that you can understand. You should insist that this be done.

Fear of the future is one of the most noticeable anxieties expressed by patients and families of some patients who have had thirty minutes with the possibility of death. It is futile to ignore the disease. Instead, attempting to understand and overcome stress, they deny the disease and equate their discharge from the hospital with being well. They begin to feel as though they are able to bring to take their medication properly, to begin to make reasonable adjustments in their lifestyle, failing to get proper rest and exercise. These patients may experience another illness within a short period of time.

The opposite but equally important reaction occurs in patients who become so fearful that a crisis will occur that they begin to consider themselves disabled. After leaving the hospital (especially after a heart attack) these patients' lifestyles are drastically limited due to emotional rather than physical problems. Heart attacks are not necessarily predictors of an early death. They may well provide the impetus for us to take our health seriously, making the necessary reasonable lifestyle adjustments that will insure a longer, more productive life.



After discharge from the hospital some patients are advised to join a rehabilitation program. The major goals of such a program include prevention of heart disease, rehabilitation of patients after heart attack, [illegible] at the [illegible] to contribute to the progression of [illegible] vessel disease. Because [illegible] medical monitoring and [illegible] with rehabilitation personnel, patients become more interested about their illness and less anxious about the future. As patients learn from dietitians and nurse clinicians required as a result of this comprehensive health care program, patients can then assume greater responsibility for their own health monitoring. By replacing fear with knowledge they can live better and perhaps longer.

Because we have given the responsibility for our health care to professionals, disease has become mysterious to us and its treatment seems magical. We are reluctant to question physicians and the medical support staff because we have come to believe that we cannot understand the mystery. We allow others to make major health decisions for us without questioning our own interest and involvement in the disease and the plan. You must never forget that this is your disease and you have the right and the responsibility to be actively involved in your own life process, which includes disease and death. By actively participating in our life process, we can help insure that health care systems function for us, providing appropriate care and support in medical emergencies.

As with other products or businesses, the consumer determines the success or failure of the service offered. As the consumers of the health care industry, we can determine the future course of health care in this country. We have a responsibility to ourselves and to each other. I encourage you to join me in this venture.

References

[illegible]

Moisturizing the Skin

Peter Heald M.D. Claude S. Burton, M.D., and J. Lamar Callaway, M.D.

The cosmetic industry spends millions of dollars advertising products that are said to keep skin young and healthy. Unfortunately, there is no magic and not even the mysterious Oil of Olay can make old skin young. However, moisturizers do improve the dryness of skin and the associated scaling and itching. The doctor who notices that the skin of the patient is dry and scaling, particularly during the winter months, will have a grateful patient if he takes care of this troublesome problem. The following comments might help in that regard.

The superficial layer of the outer skin repels water and the inner layer of the superficial skin imbibes water. In patients with dry skin the underlying cells have lost their cohesiveness and have been shed, which disrupts the vapor barrier. Preparations that are water repellant and therefore bind to the water-repelling outer layer are petrolatum (Aquaphor®, Vaseline®, Nivea® Cream) and mineral oil (Nivea® Lotion, Keri® Lotion, Jergens®). These serve as vapor barriers. The consistency of the product reflects whether it is predominantly petrolatum (solid) or mineral oil (lotion). Even when water is added to petrolatum (as in the emulsion Eucerin®) the solid consistency is maintained. When compared on a weight basis, the solid will cover twice the area of the lotion.

Urea and lactic acid increase the water-combining capacity of the inner layer of the superficial skin and are frequently added to water-repelling preparations. These substances are softening agents and control itching. Ultramide® and Nutraplus® contain urea. Lactacare® contains lactic acid. Because these water-soluble products are removed by washing the hands or bathing the body, they have to be applied frequently.

Lanolin is a natural substance secreted by the sebaceous glands of sheep. The molecules of lanolin have one end that repels water and one that is water-soluble. Some of the finest cosmetics contain lanolin.

The skin is easily sensitized to many foreign substances. Lactic acid and urea are components of normal skin and are unlikely to cause trouble. Lanolin and the hosts of fragrances, preservatives, and coloring agents used by the cosmetic industry are foreign to the body and, after repeated applications, may produce contact dermatitis. In general, the fewer ingredients, the fewer the unfavorable reactions.

How often a moisturizer is applied determines the overall cost and depends on the patient's lifestyle. It is best to apply a moisturizer at least once a day, preferably in relation to an event which may dry the skin. After washing and before going outdoors are ideal times for application, the former having the added advantage of trapping moisture in the recently wet skin.

Left to nature, the skin is moisturized from within by fats are incorporated into the growing skin to prevent loss of water. Soaps and detergents react with these fats and solubilize them. Soaps are therefore the nemesis of patients with dry skin. Patients who wash with soap may find that their skin becomes scaly, and may regard the scaling as dirt and may therefore wash more often and scrub more vigorously, which makes the scaling worse. Soaps should be used sparingly. Dove® and Tone® are mild and incorporate a moisturizer. Even the pure Ivory® may be too harsh for some persons.

A single application of a moisturizer to the face, hands and lower arms would consume approximately 2 ounces of a cream-based moisturizer and 4 ounces of a lotion. Were this to be done with plain petrolatum (approximately 34 cents per ounce), the cost would be 6.8 cents, and with mineral oil (at 16 cents per ounce) the cost would be 6.4 cents per treatment. By way of comparison, the Nivea® Cream and Lotion cost 12 cents an application. Lubriderm® Lotion is approximately 20 cents per application. Mysterious Oil of Olay Cream ($2.60 per ounce) would cost 57 cents per application and Oil of Olay Lotion ($1.22 per ounce) would cost 49 cents per application.

We recommend several of the above products to allow for patients' personal preferences.

Carolina History

Medical Student Life at Duke Fifty Years Ago

Jay M. Arena, M.D.

I will answer three questions:

1. How did I get here?
2. What was it like?
3. What was Dr. Davison like?

How did I become one of Duke's first students 52 years ago? It wasn't difficult really. About mid-term in my second year at the two year West Virginia Medical School in Morgantown, West Virginia, I had applied and been accepted at the Johns Hopkins Medical School to complete my last two years of medical education. In the 1920's and 30's there were many 2 year medical schools scattered about the country, and the 4 year schools would take one or more students as transfer students. One day, I discovered an ad in the West Virginia school paper, "The Mountaineer," describing a new medical school, called Duke, in Durham, North Carolina, a city I could hardly find on a map. On impulse, I wrote for their bulletin even though I had already been accepted elsewhere and stated as much in my letter. About 10 days later, I was called from class to take an urgent long distance call. It was a Dr. Davison, (figure 1), who explained that he was dean of the new medical school at Duke, had received my request for a bulletin, and would I accept the last admission that was open for the class of 18 transfers that was to make up his junior class. I couldn't believe what I was hearing. I thanked him very much and said I was flattered, but that I had already been accepted at Hopkins and did not know how I could ever get out of that commitment. Then came this booming voice over the phone "Ah, hell, I was assistant dean at Hopkins before I came to Duke, you let me handle that and there will be no problem at all." I was so impressed with this down-to-earth, no-nonsense, assured Dean that I accepted his offer there and then with, I might add, much misgiving. Later, I found that one of my classmates, Newt Depuy, had already been accepted at Duke and was enthusiastic about his choice.

What was student life like at the beginning in 1930? A paradise in a small cotton-tobacco town of about 40,000. We were one large, happy family. The small faculty were all under the age of 35 except one, and he didn't last long, and every one got to know each other by first name. Every day was filled with excitement and something new; the first case of pernicious anemia, pellagra with the 3 D's (dermatitis, diarrhea, and dementia), florid syphilis, lobar pneumonia, bromidism, goiter and on and on. We would all gather around the patient and learn first-hand about the disease. Our instructors were as excited as we were, for they too were seeing some of these conditions for the first time. For example, I happened to get the first pernicious anemia patient and was told by Dr. Oscar Hansen-Pruss to do a Price-Jones Curve (now obsolete). I couldn't find the method anywhere and, going back to Dr. Hansen-Pruss, I found out that he didn't know how to do one either. Finally, I accomplished this feat and then knew why the disease was called pernicious. Other highlights I recall were:

1. Room on the 3rd floor in the house staff quarters. First mate was Tom Jones and later a classmate, Bennie Dalton.

2. The use of the operating room on the third floor, when not in use, for cooking meals in the sterilizer. A specialty was spaghetti at 3 a.m., when Martin Conti and I would argue about whose mother's sauce was best and how it should be prepared.

3. The poker games between faculty, house staff and the few students who had any money. "Dr. Canfield — Dr. Canfield" over the loud speaker indicated to all that a poker game was in progress in the house staff lounge on the 3rd floor. If it was "Dr. Rokitanski — Dr. Rokitanski," it meant that an autopsy was about to be started.

Things I shall never forget:

4. Pulling the perfect smear for Oscar. . . . Dr. Hanes and his reflex arch. . . . Dr. Hart's "now when I was resident at Hopkins" . . . and who can forget his memory-loss for students' (and even house officers') names. . . . Dr. D. T. Smith's pipe, kitchen matches, elongated stethoscope and tuberculosis. . . . Texas Bob Reeves, the one-man x-ray department. . . . Watt Eagle's rapid gait and speech. . . . Dr. Forbus and his extraordinary CPC's at 5 p.m. in the hot, stuffy autopsy room. . . . Dr. Shand's demonstration of various gaits and putting on a "Jelly Boot" with the temperature around 100°F. . . . what a mess! . . . The noted Dr. Thayer's visit and amphitheater clinic where a jittery student auscultated the chest with the earpieces around his neck, and then described in great detail what he had heard. . . . Lobar pneumonia — percuss, auscultate, outline the pneumonic area. Checked by the intern who facetiously remarked that the patient should be dead with all that consolidation. He correctly outlines the areas involved (having already seen the x-rays). Treatment — good nursing care and prayer — these were the years B.S. (before Sulfa and long before penicillin). . . . Our first autopsy on October 2, 1930 (the 18th since the opening of the hospital). A 15-year-old Negro boy with generalized tuberculosis. . . . The intricacies of the 3 glass

From the Department of Pediatrics, Box 2024, Duke University Medical Center, Durham, NC 27710.

test in Alyea's urological clinic. . . . The paucity of patients in the Ob and Gyn clinic which was more than compensated by Daddy Ross's stories and/or a trek to the ball game if one were available. . . . Our acquaintance with Courvoisier's law and catarrhal jaundice in Dr. Hart's surgical amphitheater clinic. . . . The appearance of the student in flashy bright knickers at the surgical amphitheater clinic and the blast that followed reverberating throughout the hospital. . . . The spick and span appearance and the pomp and formality of the medical rounds. . . . The medical resident with the Harvard shuffle. . . . The dextrocardia that didn't appear dextro at all in Dr. Davison's pediatric amphitheater clinic. . . . Armistice Day 1930 the patient census had reached 100. . . . The country club days were over. . . . The absolute alcohol easily accessible for many, many months but (alas, alack) new labels with the additive croton oil appeared and the days of plenty were over. . . . Ned Bowman's classical *un*interrupted presentations of cases in the amphitheater. . . . Heintish and his — "Say have you heard this one?" . . . Connie Gardner and his painful feet. . . . Alky Jones with his friendly smile always eager to give a helping hand. . . . The Dean's ward round at 40 paces. . . . Julian Ruffin and the gastric neurosis. . . . The intravenous orange juice by a surgical intern; no reaction. . . . The futility of hiding the ice cream and milk on Howland. . . . Miss Farrar and her mother most gracious and always helpful in the library. . . . Monday, April 20, 1931, Dr. W. H. Welch and the colorful dedication of the Medical School. I escorted Doris Duke who was about 2-3 inches taller than I. . . . Depner, the philosopher of the group, his pipe and easy chair. . . . Halton's rocks, snakes, and bones. . . . Our lone female classmate not the least interested in the other 17 mates — and vice versa. . . . The Dean getting us out of difficulties with University administration and the law. . . . Rube Goldberg apparatus, Hart's tidal drainage. . . . The night the nurse on Strudwick gave all the patients 30cc of glycerin instead of mineral oil — and the inadequacy of the bed pan supply. . . . The Saturday night sewing parties in the accident room. . . . A few children transferred to Howland Ward October 21, 1930 — and soon it was known as "Howling" Ward. . . . Capable Miss Sherwood and her way with children. . . . Graduation day on June 8, 1932 with 13 in cap and gown.

5. Turning down the first Duke AOA Award because of lack of funds, but unbeknownst to me Dr. Davison paid the $25.00 and I received it along with George Heintish and John Jovejoy on April 1, 1931.

6. Most unforgettable patient, other than the many lye strictures, seen as a pediatric extern. A ten-year-old girl with gonorrheal ophthalmia, florid secondary syphilitic lesions and, believe it or not, tonsillar diphtheria. No special duty nurse would accept the case, which required constant irrigation of the eyes among other treatments. Finally in desperation, I called my wife Polly, who had just graduated from Watts Nursing School and willingly she accepted the case, a 12-hour duty for $5.00 and a free lunch. Tables 1 and 2 indicate hospital costs.

The third question I am supposed to answer is "What was Dr. Davison like?" I quote what I wrote for the *North Carolina Medical Journal* on the 10th anniversary of Dr. Davison's death, June 26, 1972.

The history of the Duke pediatric department and the saga of Dr. W. C. Davison, first pediatric chairman and first dean of the medical school, are one and inseparable. The Duke University Medical School is Dr. Davison's school. He was here before the buildings were built, before the books were bought for the library, before an administrative staff was assembled and before a single faculty appointment was considered. On all our walls under the paint, one finds inscribed, "Davison was here."

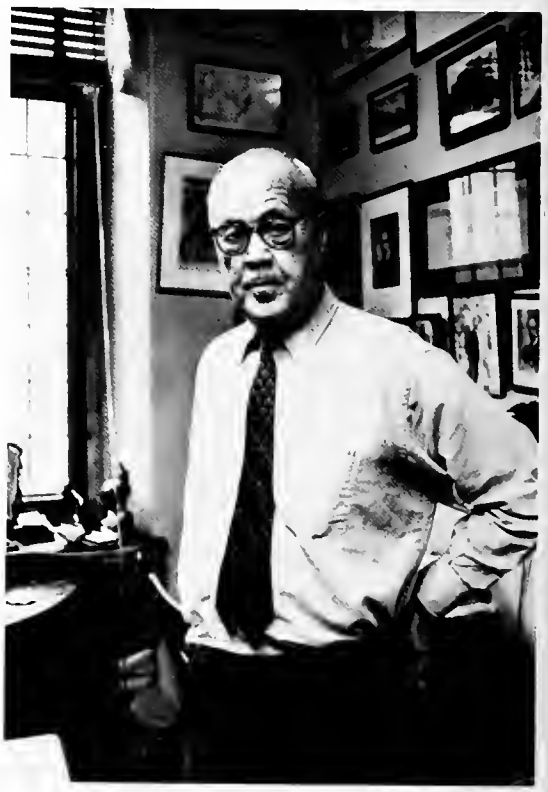


Figure 1. W. C. Davison, 1892-1972. *This photograph of Dr. Davison, taken by Dan Weiner, is reproduced with the permission of Medical Tribune, 257 Park Avenue South, New York, NY 10010. Readers interested in having a copy of the photograph may send $5.00 for the Student Scholarship Fund and the coupon below to Medical Alumni Affairs, Box 3407, Duke University Medical Center, Durham, NC 27710.*

Medical Alumni Affairs
Box 3407
Duke University Medical Center
Durham, NC 27710
Enclosed is a check for $5.00. Please send a copy of the photograph of Dr. W. C. Davison to:

_____
_____
_____
_____

Table 1

Duke Medical Center
"Flat Rate" or "Inclusive" Billing System (1932)

Services Rendered	Old Fee (1930-1932)	New Fee (1932)
19 days of surgical care, 1 operation and 1 x-ray	$149.50	$128.25
14 days of medical care on ward (medium diagnostic difficulties)	67.50	49.20

After considering the patient's ability to pay, the admitting officer might admit him to a ward for as little as a dollar a day.

Table 2

West Durham, N. C. April 22, 1931

Miss Pauline Montieth

To WATTS HOSPITAL, Dr.

Bills invariably payable in advance

1931		
April 9-22	To 12 days Institutional Care	$32.50
April 10	To Operating Room Fee	5.00
	To Drugs and Surgical Dressing	1.50
April 10-11	To Special Nurse's Board	1.35
April 11-12	To Special Nurse's Board	1.35
	To Anesthetic	5.00
	To Laboratory Examinations	2.50
	To X-Rays	
		$49.20

He was a dynamic, informal and humorous man, with a ready wit. He set no written rules if it were possible to avoid doing so. The past was prologue — the future was always now.

In all of the years that I knew him, I never heard him use the personal pronoun "I." It was always "Duke did this" or "Duke did that." It was incongruous that such a huge, bulky, bluff and non-demonstrative man with a deep resonant voice loved children, and they in turn loved him. Never once did I see him being unkind to any child, and it was woe to any student, nurse or member of the house staff who mistreated a child.

The secret of his greatness and success was that he was many things to many men. Never pretentious, he could and did reach people at any level, whether they were kings or queens, presidents, faculty, house officers, students, orderlies, and rich or poor. They were accorded the common touch of warmth and dignity he had for all. As a matter of record, Dr. Davison was probably more attached to Carl Rogers, a black orderly whom he referred to as the "assistant dean," than anyone else in the entire medical complex.

It was characteristic of Dr. Davison that he coupled his retirement after 34 years as dean of the school with a jest. "Old deans don't fade away," he said, "they just lose their faculties."

Finally, as you can tell from this brief and hurried narration, my 52 years at Duke has been exciting, a lot of fun and a pure joy.

Kempner Revisited

Eugene A. Stead, Jr., M.D.

The original descriptions of the effects of the rice diet were published in the *North Carolina Medical Journal*.[1-3] Editors of other, more widely read national journals did not appreciate that the Kempner articles would come to be recognized as classics and that here in North Carolina Dr. Kempner was making medical history. The editor of the *North Carolina Medical Journal* was wiser and published his work.

On my arrival at Duke in 1947, Walter Kempner and the rice diet were in the news. The students and house staff at Duke helped care for Kempner's patients as well as those of the rest of the staff. Each morning I had to answer the question of why Kempner's patients with destructive hypertension did better than mine or those of other members of the staff. With the help of the Durham chapter of the North Carolina Heart Association and my colleague Bernard Holland (presently Professor of Psychiatry at Emory), I started my own rice house. As Kempner had done originally, we served patients who did not have the means to pay a private doctor. We discovered several things. Twenty-four hour care of very sick hypertensive heart and kidney patients is time-consuming and difficult. The disease responded in the manner described by Kempner. The long-term care of patients who stayed for six weeks or longer in our "rice establishment" was simplified. All dieters are liars, and chemical analysis of the urine to determine oral intake is essential.

After two years we disbanded our "rice house" and from that time I have sent patients who would profit by the dietary regimes of Kempner to him.

In a letter written in 1958, I summarized Kempner's contributions as follows:

> Dr. Walter Kempner showed that our ideas regarding protein requirements were erroneous and that, in the presence of a high caloric intake, nitrogen balance can be reached on as little as 25 grams of protein per day; that man can remain in sodium and chloride balance on as little as 5 mEq per day; that the cholesterol levels in the blood can be lowered by rigid dietary restrictions.
>
> He showed that rigid dietary restriction has a favorable effect in congestive heart failure, kidney disease and

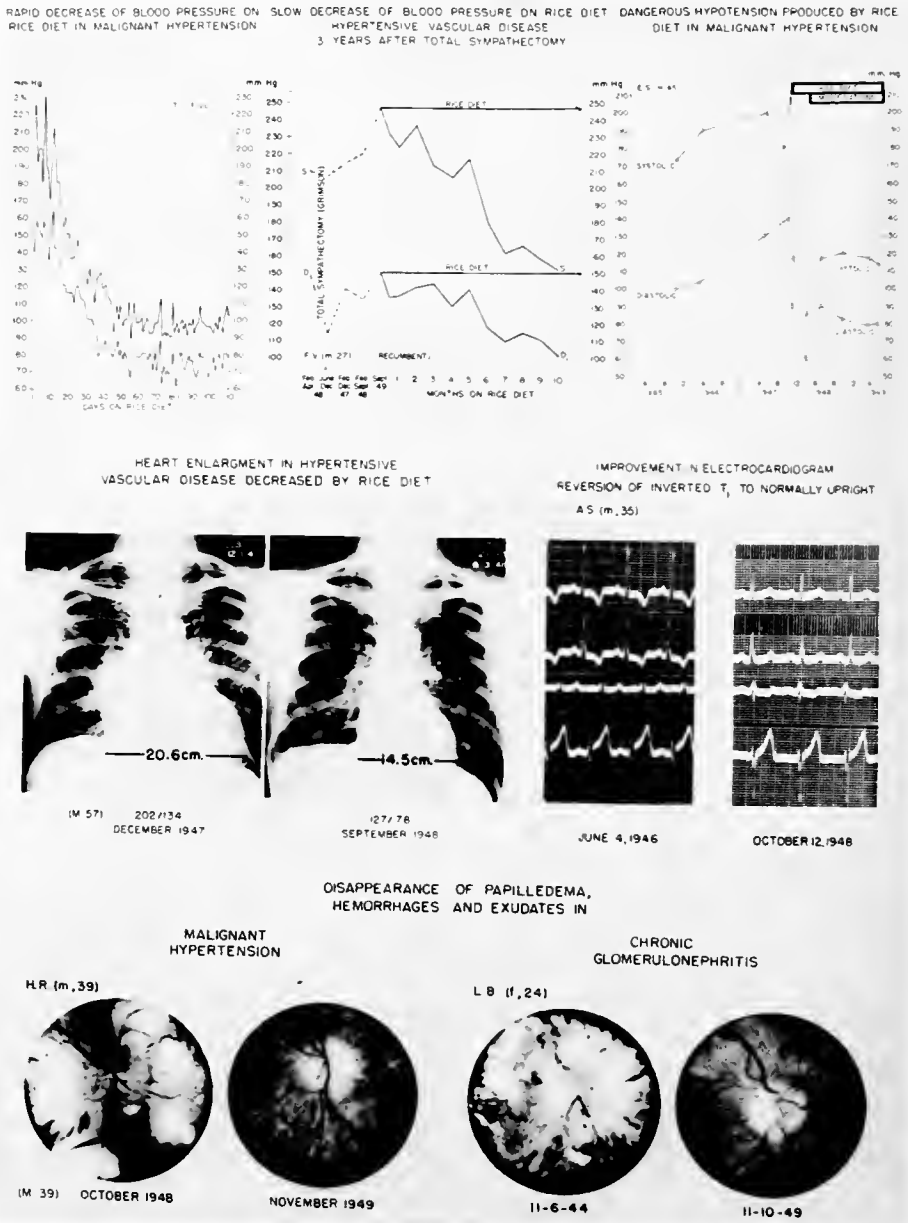


Figure 1. *Changes in several systems in several patients during treatment on Kempner's rice diet.*

hypertension, and that it affects not only subcutaneous edema but reduces cerebral edema seen in malignant hypertension, with disappearance of papilledema and retinal edema.

He demonstrated that in many patients the rice diet could reverse the course of hypertensive vascular disease in both benign and malignant states.

In his studies on the course of treated and non-treated malignant hypertension, he demonstrated that renal damage was not necessarily irreversible but that an appreciable return of kidney function was possible in many patients, provided the time of treatment is measured in years rather than weeks or months.

He has shown that, in malignant hypertension, multiple factors are at work in producing the brain, heart, retinal and renal lesions; that the blood pressure is only one factor, but that even without any change in blood pressure, favorable changes may occur with rigid dietary

treatment in the brain, heart, retina, and kidney.

In patients with nephrosis with heavy albuminuria, he has demonstrated that recovery may occur on the rice diet. The protein decreases in the urine, and the albumin content of the plasma returns to normal in the presence of a protein intake not exceeding 25 grams. Before Dr. Kempner's work, we believed that a patient with little protein in the blood who was losing a large amount of protein in the urine would have died on such a protein intake.

He has shown that diabetics with complicating vascular disease improve not only in regard to the vascular disease, including severe diabetic retinopathy, but that they tolerate the high-carbohydrate diet well; and that the diabetes mellitus itself is often favorably affected, as evidenced by decreasing insulin requirements and decreasing blood sugar levels.

The above record is one for which we at Duke have respect and admiration. It has required an immense amount of work and large sums of money.

Kempner has dedicated his life to the study of vascular disease and his strikes have all been made in areas where the experts said there was no gold. Who in his right mind would have ever thought that rice and fruit could modify vascular disease appreciably? Who would have fed a protein-deficient patient, losing large quantities of protein in his urine, a protein-poor diet? Who would have dared to give a more than 90% carbohydrate diet to a diabetic? Every expert knew that cholesterol levels were not influenced by diet. Nevertheless, all these leads have paid off richly.

Figure 1 shows examples of the responses Kempner described in the *North Carolina Medical Journal*.

With the permission of Drs. Kempner and Newborg, I am re-publishing an updated 42-year-old blood pressure chart of Katherine Ormston, the first executive secretary of the North Carolina Heart Association (figure 2). Miss Ormston was referred to Kempner by a well-known New York cardiologist (Dr. Irving Wright) after bilateral sympathectomy (by Dr. Reginald Smithwick in Boston) failed to control her hypertension. In 1953, while she was still following the Rice Diet, I had a talk with her concerning the patient's viewpoint of this treatment. She assured me that while a salt-free diet was inconvenient, especially in conjunction with an active job requiring considerable travel, it was certainly possible. She pointed out, too, that since she had been Dr. Kempner's patient she had taken no medication except regular multivitamins, and occasional aspirin and antibiotics for severe winter colds.

She continued:

> More important to me personally is the fact that since September 1, 1948, I have been steadily engaged in earning my own living, with only the usual vacations and holidays; and the only time I have lost through illness during that time was because of the above-mentioned colds. In August 1950, I became executive secretary of the North Carolina Heart Association which was in the beginning stage of establishment in this state. This work has required steadily increasing activity and responsibility, long hours of work and considerable travel. I've driven my car about 34,000 miles during these years,

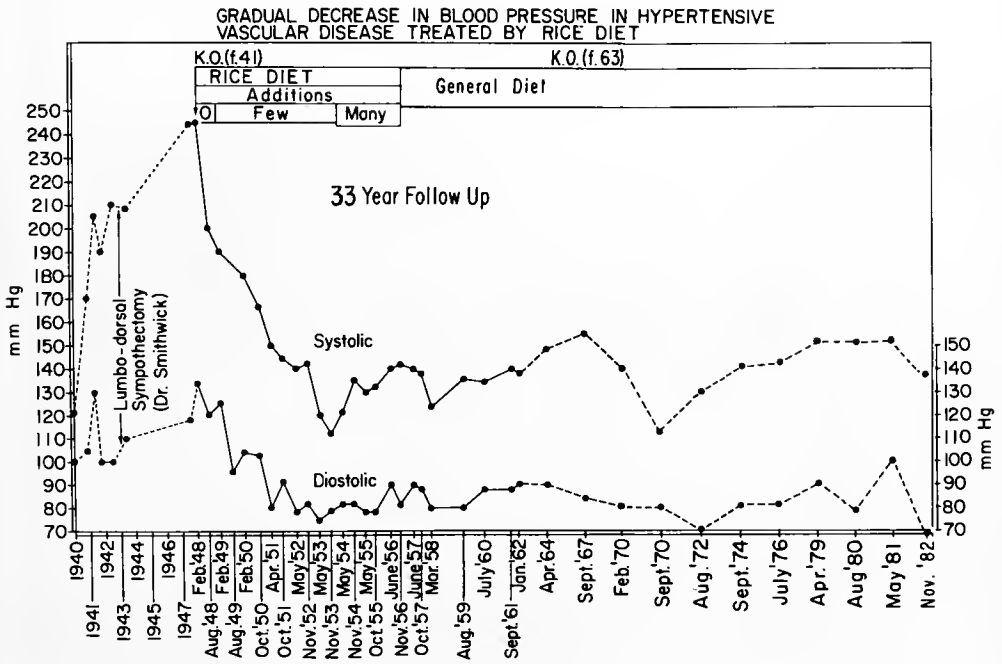


Figure 2. *Forty-two year followup of Katherine Ormston.*

much of it for organizational and fund-raising work. Looking back, it seems to me that my blood pressure decreased as my work and responsibility increased.

Another point which seems to interest doctors is loss of weight. My height is 5′ 4½″ and my build is rather slight. For a good many years my normal weight was around 110 pounds. When I started the modified rice diet in New York, I weighed about 118 pounds. Four months later, when I first came to Durham, I weighed 105 pounds. At the end of 100 days on the "basic" rice-fruit-sugar diet, I weighed 115 pounds. Since then my weight has fluctuated between 98 and 110 pounds, apparently depending upon such factors as the amount of energy I was expending or how hot the summer was.

Best of all, to me, has been the consistent feeling of well-being. I have, throughout the past 5 years, slept well each night (with no medication whatever) and wakened with sufficient energy to carry me through a busy day without difficulty. I am, in fact, living a normal, busy, happy life; I just can't eat everything I'd like to have. Perhaps in the future even that will be remedied.

A few days ago, 30 years after the conversation described above, I chatted with Miss Ormston again. Now 76 years old, she has been working continuously since that time, and only recently reduced her work week to three days instead of five. In 1954, Dr. Kempner allowed her to discontinue the Rice Diet, gradually at first. For many years she has eaten as she chooses, but voluntarily limits her intake of salt, fat and red meat, and prefers food that is prepared simply. Her highest weight in 30 years was 126 pounds for a short period; it now fluctuates a little above or below 115 pounds. She has made nine trips to Europe, and recovered without complication from two major operations. The reduction in work week has not decreased her activity; for the past three years her housekeeping duties have been doubled by care of an invalid sister who came to live with her.

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1. Kempner W: Treatment of kidney disease and hypertensive vascular disease with rice diet. NC Med J 1944; 5:125-133.
2. Kempner W: Treatment of kidney disease and hypertensive vascular disease with rice diet, II. NC Med J 1944; 5:273-274.
3. Kempner W: Treatment of kidney disease and hypertensive vascular disease with rice diet, III. NC Med J 1945; 6:61-87 and 117-161

Learning without Work

Blood Pressure Measurement: Getting the Right Cuff

John R. Feussner, M.D., Carol L. Blessing-Feussner, PA-C, and Eugene W. Linfors, M.D.

Measurement of arterial blood pressure is a routine medical procedure, so routine that it is often carried out at health fairs, shopping malls, and grocery stores. All these determinations are justified since hypertension is a common medical problem and its measurement seems simple.

Several recent clinical trials, including the Hypertension Detection and Follow-Up Program,[1] report beneficial effects from the treatment of even very mild hypertension (i.e., diastolic blood pressure above 90 mm Hg). While it has always been important to measure blood pressure accurately, these recent recommendations make careful and accurate measurements a must, lest many patients be treated overaggressively or inappropriately. In order to assure accurate blood pressure readings, proper techniques are essential, but these are sometimes not carefully observed with an instrument as deceptively familiar as the sphygmomanometer.

The American Heart Association has published an informative booklet[2] that reviews the specific techniques for measuring arterial blood pressure and discusses important features of all components of the measuring process — the observer, the patient, the stethoscope, the various sizes of sphygmomanometer cuffs and the calibration of the instrument. Each of these components is important, but we are particularly concerned with the sphygmomanometer cuff itself. For adult patients, the Heart Association recommends four different size cuffs with different bladder widths and lengths, ranging from a small adult cuff, 11 x 17 cm, for patients with small arms, to a thigh cuff, 20 x 42 cm, for patients with very large arms.

In a busy office it may be difficult to follow this recommendation faithfully, and patients may instead be tested with the standard size cuff (13 x 24 cm) supplied with the instrument. This can lead to spuriously *high* readings in patients with large arms. Our own experience suggests that the recommendation can be simplified considerably by using *one* size cuff for *all* adults, but that this should be the large adult cuff (14.5 x 37 cm).[3] This size cuff provides accurate blood pressure measurements; it does not underestimate blood pressure in patients with small arms nor does it overestimate blood pressure in patients with large arms. While a thigh cuff may be used in patients with the largest arms, its excessive size makes it unwieldy for both the observer and the patient.

From the Division of General Internal Medicine, Department of Medicine, Duke University Medical Center, Durham, North Carolina 27710.

Errors are not at all unusual when standard cuffs are used to measure blood pressure in large arms.

Case 1. A 62-year-old woman was referred for additional therapy of her hypertension. She was 157.5 cm (5′3″) tall, weighed 84 kg (185 lbs), and had an arm circumference of 41 cm (16.4″). The referral blood pressure obtained with a standard adult cuff was 150/90 mm Hg supine and 170/94 mm Hg standing, and she was being treated with hydrochlorothiazide, prazosin and apresoline. Our first measurements, also with a standard adult cuff, were 160/92 mm Hg supine and 174/94 mm Hg standing. With the more appropriate large adult cuff, her blood pressure was 140/80 mm Hg both supine and standing. Use of only a standard adult cuff misled the referring physician to conclude that her blood pressure was not adequately controlled.

Case 2. A 70-year-old man was referred for treatment of "severe hypertension." He was 167.5 cm (5′7″) tall, weighed 104 kg (229 lbs) and had an arm circumference of 45 cm (18″). His physician obtained blood pressures of 180/110 mm Hg supine and standing using a standard adult cuff. We repeated the measurements using a standard cuff and observed a blood pressure of 170/108 mm Hg. When a large adult cuff was substituted for the standard cuff, the blood pressure was 158/80 mm Hg supine and 150/86 standing. The patient was not severely hypertensive; rather, he was quite normotensive and required no therapy. He remained normotensive during followup.

These two examples show that misleading blood pressures can be obtained when a standard size cuff is used to measure blood pressure in a large arm. To avoid such errors one can follow the recommendations of the American Heart Association and match one of four cuff sizes to the appropriate arm circumference. Alternately, simplify these recommendations as we suggest and use a large adult cuff (14.5 x 37 cm) on all patients.[3]

Note. Cuff sizes refer to the dimensions of the rubber bladder within the cuff, i.e., bladder width and length.

References

1. Hypertension detection and follow-up program cooperative group. Five year findings of the hypertension detection and follow-up program. I. Reduction in mortality of persons with high blood pressure. II. Mortality by race-sex and age. JAMA 1979;242:2562-77.
2. Kirkendall WM, Feinleib M, Freis ED, Mark AL. Recommendations for human blood pressure determination by sphygmomanometers. *Report of a Subcommittee of the Postgraduate Education Committee*, American Heart Association, 1980;3-14, and 19-20.
3. Linfors EW, Feussner JR, Blessing CL, Starmer CF, Neelon FA, McKee PA. Spurious hypertension in the obese patient: Effect of sphygmomanometer cuff size on prevalence of hypertension. JAMA 1983, in press.

Obesity Destabilizes the System

Barbara Newborg, M.D.

The lungs normally contain a large volume of air. When we hold our breath the air in the lungs allows the continued oxygenation of blood and allows the CO_2 to occupy the space from which the oxygen is being removed. This reserve volume of air stabilizes the system much as a flywheel can stabilize an energy producing system. In very obese persons, this flywheel-like stabilizing function is lost. Moreover, the obese body extracts more oxygen and adds more CO_2 per unit of time. The loss of air volume in the lungs reduces the effectiveness of the flywheel-like stabilizing effect and the increased body mass depletes the available oxygen supply more quickly. Short periods of apnea produce large changes in blood gases. Sophisticated lung function studies are not needed to establish the large loss in lung capacity. A glance at the x-rays shown in figure 1 is sufficient.

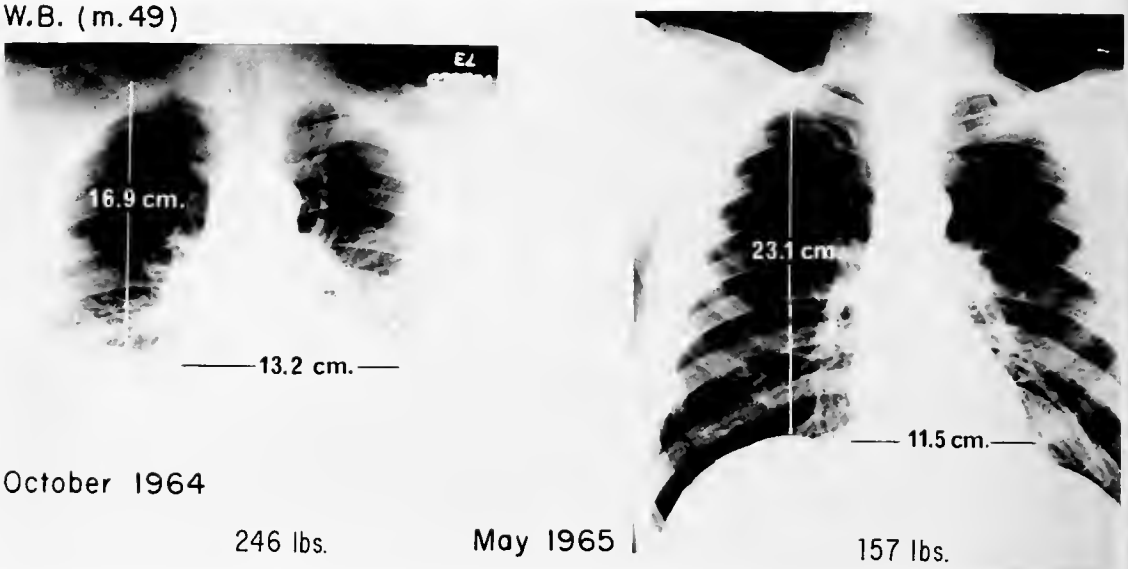
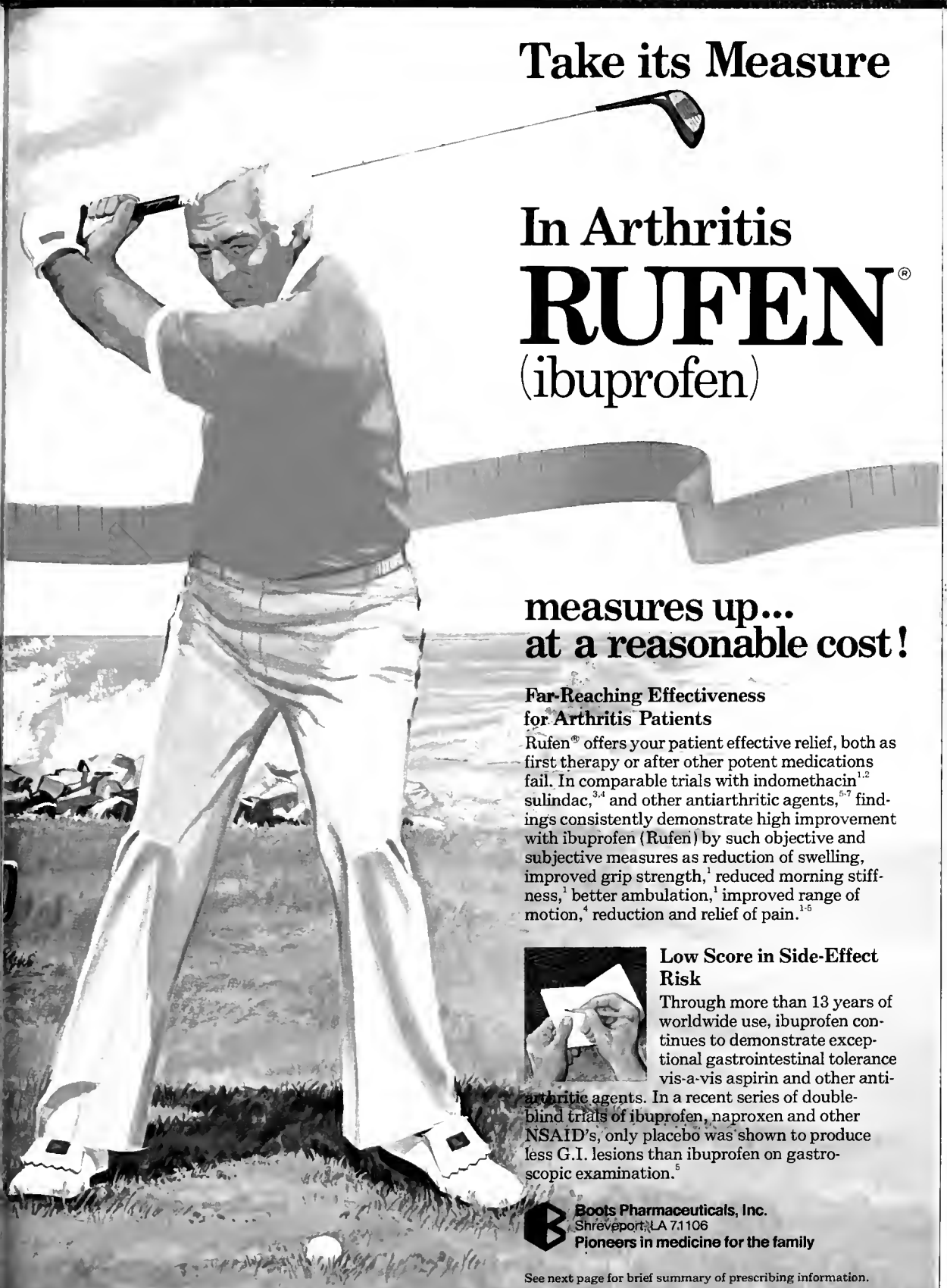


Figure 1. Increase in lung capacity and decrease in heart size in a patient treated by rice/reduction diet.

From the Division of General Medicine, Department of Medicine, Duke University Medical Center, Durham, NC 27710.

Take its Measure



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Through more than 13 years of worldwide use, ibuprofen continues to demonstrate exceptional gastrointestinal tolerance vis-a-vis aspirin and other antiarthritic agents. In a recent series of double-blind trials of ibuprofen, naproxen and other NSAID's, only placebo was shown to produce less G.I. lesions than ibuprofen on gastroscopic examination.[5]

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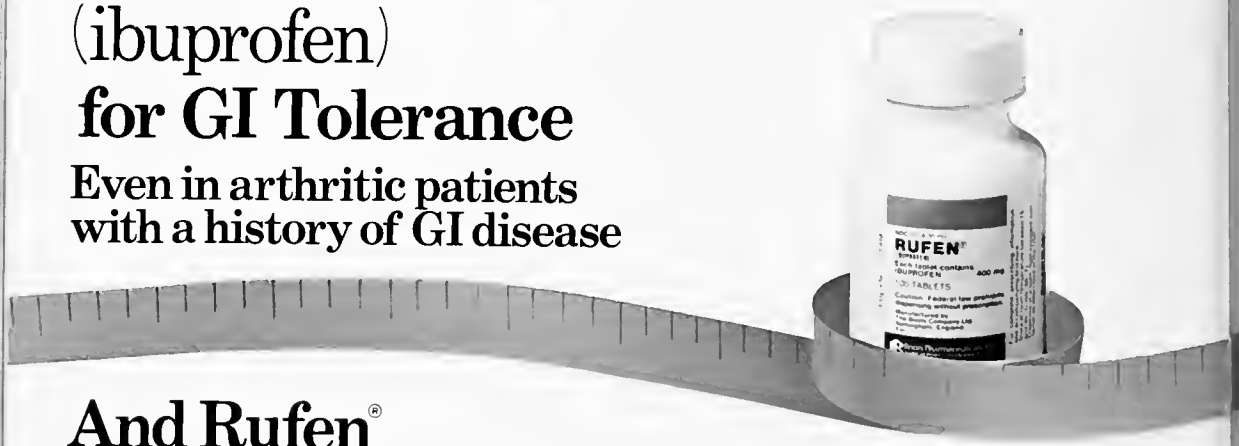
See next page for brief summary of prescribing information.

Measure RUFEN® (ibuprofen) for GI Tolerance

Even in arthritic patients with a history of GI disease



And Rufen® Measures Up Best

Over a five-year period, ibuprofen was administered to 64 patients with known peptic ulceration and 42 with known gastric intolerance to other antiarthritis drugs.

Twenty-six patients remained in treatment, 23 left treatment following remission, and 35 dropped out for reasons unrelated to side effects. In this specially selected group of GI-intolerant patients, only 13 (12.3%) discontinued ibuprofen because of GI intolerance.

"Any drug used in the control of the symptoms of the chronic arthritis must be tolerated for long periods without undue gastric discomfort...From this study it appears that ibuprofen is eminently suitable."[8]

Peptic ulceration and GI bleeding, sometimes severe, have been reported. Rufen® should be given under close supervision to patients with a history of upper GI tract disease.

References: 1. Royer GL, Jr, Moxley TE, Hearron MS, et al: *J Int Med Res* 3:158-171, 1975. 2. Royer, GL, Jr, Moxley TE, Hearron MS, et al: *Curr Therap Res* 17:234-248, 1975. 3. Brackertz B, Busson M. *Brit J Clin Pract* 32:77-80, 1978. 4. Tausch J, Fasching U: *Brit J Clin Pract: A symposium supplement, IXTH European Congress of Rheumatology*, Wiesbaden, Germany, Sept 2-8, 1979, pp 53-61. 5. Lanza FL, Royer GL, Jr, Nelson RS et al: *Dig Dis & Sci* 24:823-828, 1979. 6. Pavelka K, Susta A, Vojtisek A et al: *Rheumatol and Rehab* 12:68-73, 1973. 7. Tretenhahn W: *Brit J Clin Pract: A symposium supplement, IXTH European Congress of Rheumatology*, Wiesbaden, Germany, Sept 2-8, 1979, pp 45-52. 8. Cardoe N: Curr Med Res & Opinion 3:518-520, 1975.

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RUFEN® (ibuprofen) Tablets

INDICATIONS AND USAGE. Treatment of signs and symptoms of rheumatoid arthritis and osteoarthritis during acute flares and in the long-term management of these diseases. Safety and effectiveness have not been established for Functional Class IV rheumatoid arthritis.

Relief of mild to moderate pain. Treatment of primary dysmenorrhea

CONTRAINDICATIONS: Patients hypersensitive to ibuprofen, or with the syndrome of nasal polyps, angio-edema and bronchospastic reactivity to aspirin or other nonsteroidal anti-inflammatory drugs (see WARNINGS).

WARNINGS Anaphylactoid reactions have occurred in patients hypersensitive to aspirin (see CONTRAINDICATIONS). Peptic ulceration and gastrointestinal bleeding, sometimes severe, have been reported. Peptic ulceration, perforation, or gastrointestinal bleeding can end fatally, however, an association has not been established. Rufen should be given under close supervision to patients with a history of upper gastrointestinal tract disease, and only after consulting the ADVERSE REACTIONS.

In patients with active peptic ulcer and active rheumatoid arthritis, nonulcerogenic drugs, such as gold, should be attempted. If Rufen must be given, the patient should be under close supervision for signs of ulcer perforation or gastrointestinal bleeding.

PRECAUTIONS Blurred and/or diminished vision, scotomata, and/or changes in color vision have been reported. If developed, discontinue Rufen and administer an ophthalmologic examination.

Fluid retention and edema have been associated with Rufen, caution should be used in patients with a history of cardiac decompensation.

Rufen can inhibit platelet aggregation and prolong bleeding time. Use with caution in patients with intrinsic coagulation defects and those taking anticoagulants.

Patients should report signs or symptoms of gastrointestinal ulceration or bleeding, blurred vision or other eye symptoms, skin rash, weight gain or edema.

To avoid exacerbation of disease or adrenal insufficiency, patients on prolonged corticosteroid therapy, this therapy should be tapered slowly when adding Rufen.

DRUG INTERACTION *Coumarin-type anticoagulants* The physician should be cautious when administering Rufen to patients on anticoagulants.

Aspirin Concomitant use may decrease Rufen blood levels.

PREGNANCY AND NURSING MOTHERS: Rufen should not be taken during pregnancy nor by nursing mothers.

ADVERSE REACTIONS Incidence greater than 1%. Gastrointestinal: The most frequent adverse reaction is gastrointestinal (4 to 16%), includes nausea*, epigastric pain*, heartburn*, diarrhea, abdominal distress, nausea and vomiting, indigestion, constipation, abdominal cramps or pain, fullness of GI tract (bloating and flatulence). Central Nervous System: dizziness*, headache, nervousness. Dermatologic: rash* (including maculopapular type), pruritus. Special Senses: tinnitus. Metabolic: decreased appetite, edema, fluid retention. Fluid retention generally responds promptly to drug discontinuation (see PRECAUTIONS). *Incidence 3% to 9%.

Incidence less than 1 in 100. Gastrointestinal: gastric or duodenal ulcer with bleeding and/or perforation, hemorrhage, melena. Central Nervous System: depression, insomnia, confusion, emotional lability, somnolence, aseptic meningitis with fever and coma. Dermatologic: vesiculobullous eruptions, urticaria, erythema multiforme, Stevens-Johnson syndrome and alopecia. *Special Senses*: hearing loss, amblyopia (blurred and/or diminished vision, scotomata and/or changes in color vision) (see PRECAUTIONS). Hematologic: neutropenia, agranulocytosis, aplastic anemia, hemolytic anemia (sometimes Coombs' positive), thrombocytopenia with or without purpura, eosinophilia, decreases in hemoglobin and hematocrit. Cardiovascular: congestive heart failure in patients with marginal cardiac function, elevated blood pressure. Allergic: syndrome of abdominal pain, fever, chills, nausea and vomiting, anaphylaxis, bronchospasms (see CONTRAINDICATIONS). Renal: acute renal failure in patients with preexisting significantly impaired renal function, decreased creatinine clearance, polyuria, azotemia, cystitis, hematuria. Miscellaneous: dry eyes and mouth, gingival ulcers, rhinitis.

Causal relationship unknown. Gastrointestinal: pancreatitis. Central Nervous System: paresthesias, hallucinations, dream abnormalities, pseudotumor cerebri. Dermatologic: toxic epidermal necrolysis, photoallergic skin reactions. Special Senses: conjunctivitis, diplopia, optic neuritis. Hematologic: bleeding episodes. Allergic: serum sickness, lupus erythematosus syndrome, Henoch-Schonlein vasculitis. Endocrine: gynecomastia, hypoglycemia. Cardiovascular: arrhythmias (sinus tachycardia, bradycardia, and palpitations). Renal: renal papillary necrosis.

OVERDOSAGE Acute overdosage, the stomach should be emptied. Rufen is acidic and excreted in the urine, alkaline diuresis may benefit.

DOSAGE AND ADMINISTRATION: Rheumatoid arthritis and osteoarthritis, including flareups of chronic disease: Suggested dosage 400 mg t i d or q i d.

Dysmenorrhea 400 mg every 4 hours as necessary.

Mild to moderate pain: 400 mg every 4 to 6 hours as necessary for the relief of pain. *Do not exceed 2,400 mg per day.*

CAUTION Federal law prohibits dispensing without prescription.

Bulletin Board

Continuing Medical Education

Please note: 1. The Continuing Medical Education Programs at Bowman Gray, Duke, East Carolina and UNC Schools of Medicine, Dorothea Dix, and Burroughs Wellcome Company are accredited by the American Medical Association. Therefore CME programs sponsored or cosponsored by these schools automatically qualify for AMA Category I credit toward the AMA's Physician Recognition Award, and for North Carolina Medical Society Category A credit. Where AAFP credit has been obtained, this also is indicated.

April 13
"Human Sexuality and Related Subjects"
Place: Wilson
Info: Wilson Memorial Hospital, Wilson, NC

April 13
"Records and Other Necessities"
Place: Greensboro
Info: Wayne Parker, Medical Mutual Insurance Company, Box 27444, Raleigh, NC 27611. 919/828-9334

April 14-17
"International Single Fiber EMG Course and Symposium"
Place: Durham
Credit: 28 hours
Info: Donald B. Sanders, M.D., Box 3403, Duke University Medical Center, Durham, NC 27710. 919/684-6078

April 16
"Recent Knowledge and Practical Pointers in Office Rheumatology"
Place: Greenville
Fee: $50
Info: Edwin W. Monroe, M.D., P.O. Box 7224, Greenville, NC 27834. 919/758-5200

April 16-17
"Anesthetic Problems"
Place: Chapel Hill
Fee: $125
Credit: 9.5 hours AMA
Info: W. B. Wood, M.D., CME Office, 231 MacNider 202H, Chapel Hill, NC 27514. 919/962-2118

April 17-20
"Workshop on Beyond Advanced Clinical Teaching: Small Groups & Lectures"
Place: Rougemont
Credit: 20 hours
Info: Katharine Munning, Ph.D., Duke-Watts Family Medicine Program, 407 Crutchfield Street, Durham, NC 27704. 919/471-2571

April 20
"Diabetes Update 1983"
Place: Greensboro
Fee: $35 physicians; $25 non-physicians
Credit: 5 hours AMA
Info: W. B. Wood, M.D., Director CME, 231 MacNider 202H, UNC School of Medicine, Chapel Hill, NC 27514. 919/962-2118

April 20
"Medical Records and Documentation, Legal Aspects"
Place: Sanford
Credit: 2 hours AMA
Info: Robert S. Cline, M.D., Central Carolina Hospital, Sanford, NC 27330. 919/774-4100, ext. 394

April 20
"Malpractice Awareness — Stat"
Place: Durham
Info: Wayne Parker; Medical Mutual Insurance Company, Box 27444, Raleigh, NC 27611. 919/828-9334

April 21
"Facilitating Treatment Through Hypnotic Techniques"
Place: Raleigh
Fee: $50-70
Limit: 150
Info: Belinda Novik, 407 Crutchfield Street, Durham, NC 27704. 919/471-2571

April 21-23
North Carolina Surgical Association meeting
Place: Southern Pines
Info: Ross S. McElwee, M.D., 3535 Randolph Road, Charlotte, NC 28211. 704/364-8100

April 21
"C.T. Scanning of the Body"
Place: New Bern
Info: William B. Hunt, Jr., M.D., P.O. Box 2157, New Bern, NC 28560. 919/633-8620

April 22-23
"Pediatric Postgraduate Course"
Place: Winston-Salem
Fee: $80
Credit: 9 hours, AMA Category 1
Info: Emery C. Miller, M.D., Bowman Gray School of Medicine, Winston-Salem, NC 27103. 919/748-4450

April 23
"Spring Medical Alumni Weekend"
Place: Durham
Info: Janet Sanfilippo, Box 3407, Duke University Medical Center, Durham, NC 27710. 919/684-6347

April 23
"Biomedical Consequences of Nuclear Weapons and Nuclear War"
Place: Chapel Hill
Fee: $60
Info: W. B. Wood, M.D., Director CME, 231 MacNider 202H, UNC School of Medicine, Chapel Hill, NC 27514. 919/962-2118

April 23-24
"Perinatology and Ultrasound"
Place: Chapel Hill
Fee: $200
Info: W. B. Wood, M.D., Director CME, 231 MacNider 202H, UNC School of Medicine, Chapel Hill, NC 27514. 919/962-2118

April 27
"Current Concepts of Otolaryngology for Primary Care Physicians"
Place: Chapel Hill
Credit: 6 hours AMA
Info: W. B. Wood, M.D., Director CME, 231 MacNider 202H, UNC School of Medicine, Chapel Hill, NC 27514. 919/962-2118

April 30
"Symposium on Adolescent Medicine for Primary Care Physicians"
Place: Chapel Hill
Fee: $95
Credit: 6 hours AMA
Info: Robert J. Senior, M.D., 500 Eastowne Drive, Chapel Hill, NC 27514. 919/929-3471

May 4
"Malpractice Awareness — Stat"
Place: Pinehurst
Info: Wayne Parker, Medical Mutual Insurance Company, Box 27444, Raleigh, NC 27611. 919/828-9334

May 7
"The Role of Plastic Surgery in NC"
Place: Pinehurst
Info: Paul Gwyn, M.D., 2901 Maplewood Avenue, Winston-Salem, NC 27103. 919/765-8620

May 11
"Records and Other Necessities"
Place: Wilson
Info: Wayne Parker, Medical Mutual Insurance Company, Box 27444, Raleigh, NC 27611. 919/828-9334

May 12-13
"Anterior Segment Surgery: Advances and Complications"
Place. Durham
Info: Carol Vilas, Box 3802, Duke University Medical Center, Durham, NC 27710. 919/684-6743

May 11-12
"Breath of Spring, '83"
Place: Winston-Salem
Fee: $100
Credit: 10 hours AMA
Info: Emery C. Miller, M.D., Bowman Gray School of Medicine, Winston-Salem, NC 27103. 919/748-4450

May 13
"Recent Advances in the Diagnosis and Treatment of Pediatric Pulmonary Infection"
Place: Durham
Fee: $60
Credit: 12 hours
Info: Alexander Spock, M.D., Box 2994, Duke University Medical Center, Durham, NC 27710. 919/681-3364

May 16
"Records and Other Necessities"
Place: Salisbury
Info: Wayne Parker, Medical Mutual Insurance Company, Box 27444, Raleigh, NC 27611. 919/828-9334

May 17
"Records and Other Necessities"
Place: Albemarle
Info: Wayne Parker, Medical Mutual Insurance Company, Box 27444, Raleigh, NC 27611. 919/828-9334

May 18
"Hypertensive Vascular Disease"
Place: Sanford
Credit: 3.5 hours AMA
Info: Robert S. Cline, M.D., Central Carolina Hospital, Sanford, NC 27330. 919/774-4100. ext. 394

May 19-21
NC Chapter, American College of Surgeons
Place: Wrightsville Beach
Info: Richard Furman, M.D., 702 State Farm Road, Boone, NC 28607. 704/264-2340

May 19-20
"Communication Problems in Autism"
Place: Chapel Hill
Credit: 12 hours AMA
Info: W. B. Wood, M.D., Director CME, 231 MacNider 202H, UNC School of Medicine, Chapel Hill, NC 27514. 919/962-2118

May 20
"Pediatrics Day 1983"
Place: Greenville
Fee: $50
Credit 6 hours AMA
Info: Edwin W. Monroe, M.D., P.O. Box 7224, Greenville, NC 27834. 919/758-5200

May 20-21
"17th Annual Duke McPherson Otolaryngology Symposium"
Place: Durham
Info: Joseph C. Farmer, M.D., Box 3805, Duke University Medical Center, Durham, NC 27710. 919/684-5238

May 20-21
"Anterior Segment Laser Therapy"
Place: Chapel Hill
Credit: 10 hours AMA
Info: W. B. Wood, M.D., Director CME, 231 MacNider 202H, UNC School of Medicine, Chapel Hill, NC 27514. 919/962-2118

May 21
"3rd Annual Teaching Skills Workshop for Family Medicine"
Info: George Parkerson, M.D., Box 3886, Duke University Medical Center, Durham, NC 27710. 919/471-2571

May 22
"Symposium on Adolescent Medicine for Primary Care Physicians"
Place: Chapel Hill
Fee: $95
Credit: 6 hours AMA
Info: Robert J. Senior, M.D., 500 Eastowne Drive, Chapel Hill, NC 27514. 919/929-3471

May 23-25
"Physically Disabled Adolescent"
Place: Chapel Hill
Credit: 18.5 hours AMA
Info: W. B. Wood, M.D., Director CME, 231 MacNider 202 H, UNC School of Medicine, Chapel Hill, NC 27514. 919/962-2118

May 25-28
"Elder Care: Practical Review of Clinical Topics"
Place: Sea Level
Credit: 17 hours AMA
Info: Harvey Jay Cohen, M.D., Box 3003, Duke University Medical Center, Durham, NC 27710. 919/684-3176

May 26-28
"Cardiology Update for Family Physicians"
Place: Boone
Credit: 16 hours AAFP
Info: North Carolina Academy of Family Physicians, P.O. Box 20146, Raleigh, NC 27619. 919/781-6467

May 27
"Flexible Sigmoidoscopy for the Primary Care Physician"
Place: Winston-Salem
Fee: $100
Credit: 6 hours AMA
Info: Emery C. Miller, M.D., Bowman Gray School of Medicine, Winston-Salem, NC 27103. 919/748-4450

May 27-29
"Medical Update — Selected Topics"
Place: Southern Pines
Fee: $75 plus hotel
Credit: 8 hours AMA, 6 hours AAFP
Info: Barbara S. Page, Wake AHEC, 3000 New Bern Avenue, Raleigh, NC 27610. 919/755-8030

June 2-3
"Orgain Cardiology Symposium"
Info: Galen S. Wagner, M.D., Box 32112, Duke University Medical Center, Durham, NC 27710. 919/681-2255

June 7
"Duke Tuesday"
Place: Durham
Credit: 5 hours
Info: Linda Mace, Division of Urology, Box 3707, Duke University Medical Center, Durham, NC 27710. 919/684-2033

June 8
"Malpractice Awareness — Stat"
Place: Greensboro
Info: Wayne Parker, Medical Mutual Insurance Company, Box 27444, Raleigh, NC 27611. 919/828-9334

June 8-9
"Fiberoptic Sigmoidoscopy Workshop"
Place: Greenville
Credit: 7 hours AMA
Info: Edwin W. Monroe, M.D., P.O. Box 7224, Greenville, NC 27834. 919/758-5200

June 9-11
"Exercise: Science and Practice"
Place: Chapel Hill
Fee: $90
Credit: 16 hours AMA
Info: Donna Bernhardt, M.S., L.P.T., Department of Allied Health Professions, Medical School Wing C-221H, Chapel Hill, NC 27514. 919/966-5005

June 10
"R. J. Reeves Symposium and Lecture: Advances in Radiology — Implications for the Practicing Radiologist"
Place: Durham
Info: Cindi Easterling, Box 3306, Duke University Medical Center, Durham, NC 27710. 919/684-6485

June 11
"Investigation of Sudden Death: Beginning at the Scene"
Place: Atlantic Beach
Info: Edwin W. Monroe, M.D., P.O. Box 7224, Greenville, NC 27834. 919/758-5200

June 12-15
"Behavioral Aspects of Family Medicine"
Place: Rougemont
Credit: 20 hours
Info: Katharine Munning, Ph.D., Duke-Watts Family Medicine Program, 407 Crutchfield Street, Durham, NC 27704. 919/471-2571

June 16
"Malpractice Awareness — Stat"
Place: Kill Devil Hills
Info: Wayne Parker, Medical Mutual Insurance Company, Box 27444, Raleigh, NC 27611. 919/828-9334

June 16-17
"Duke/Watts Family Medicine Symposium"
Info: Samuel Warburton, M.D., 407 Crutchfield Street, Durham, NC 27704. 919/471-2571

June 22
"Asthma and IPPB, Spirometry"
Place: Sanford
Credit: 3.5 hours AMA
Info: Robert S. Cline, M.D., Central Carolina Hospital, Sanford, NC 27330. 919/774-4100, ext. 394

June 28
"Records and Other Necessities"
Place: Hickory
Info: Wayne Parker, Medical Mutual Insurance Company, Box 27444, Raleigh, NC 27611. 919/828-9334

June 29
"Records and Other Necessities"
Place: Boone
Info: Wayne Parker, Medical Mutual Insurance Company, Box 27444, Raleigh, NC 27611. 919/828-9334

July 1-29
"Medical Mycology"
Place: Durham
Credit: 70 hours
Info: T. G. Mitchell, M.D., Box 3803, Duke University Medical Center, Durham, NC 27710. 919/684-5792

July 7-9
"Topics in Internal Medicine"
Place: Asheville
Fee: $125
Credit: 12 hours, Category I AMA
Info: Emery C. Miller, M.D., Bowman Gray School of Medicine, Winston-Salem, NC 27103. 919/748-4450

July 11-15
"25th Annual Postgraduate Course — Morehead Symposium"
Place: Atlantic Beach
Credit: 25 hours
Info: Cindi Easterling, Box 3306, Duke University Medical Center, Durham, NC 27710. 919/684-6485

July 20
"Poisoning and Suicides"
Place: Sanford
Credit: 2 hours, Category I AMA
Info: Robert Cline, M.D., Central Carolina Hospital, 1135 Carthage Street, Sanford, NC 27330. 919/774-4100, ext. 394

July 25-29
"Diagnostic Imaging Postgraduate Course"
Place: Atlantic Beach
Fee: $375 ($200 for those in training)
Credit: 25 hours
Info: Donald R. Kirks, M.D., Box 3834, Duke University Medical Center, Durham, NC 27710. 919/684-2711

August 17
"Cardiovascular Disease: Risk Reduction Strategies"
Place: Sanford
Credit: 2 hours
Info: Robert Cline, M.D., Central Carolina Hospital, 1135 Carthage Street, Sanford, NC 27330. 919/774-4100, ext. 394

August 23
"Records and Other Necessities"
Place: Asheville
Info: Wayne Parker, Medical Mutual Insurance Company, Box 27444, Raleigh, NC 27611. 919/828-9334

August 27
"Geriatric Education Day"
Place: Raleigh
Credit: 6 hours AAFP
Info: NC Academy of Family Physicians, Box 20146, Raleigh, NC 27612. 919/781-6467

September 1
"Malpractice Awareness — Stat"
Place: Raleigh
Info: Wayne Parker, Medical Mutual Insurance Company, Box 27444, Raleigh, NC 27611. 919/828-9334

September 16
"Fifth Annual Health Law Forum"
Place: Greenville
Info: Edward E. Hollowell, 1100 Dresser Court, Raleigh, NC 27609. 919/872-2830

September 21
"Third Annual Central Carolina Hospital Symposium"
Place: Sanford
Credit: 2 hours Category I AMA
Info: Robert Cline, M.D., Central Carolina Hospital, 1135 Carthage Street, Sanford, NC 27330. 919/774-4100, ext. 394

September 29-October 2
"Diseases of the Upper Urinary Tract"
Place: Pinehurst
Credit: 16 hours Category I
Info: Linda Mace, Box 3707, Duke University Medical Center, Durham, NC 27710. 919/684-2033

October 3
"Perinatal Medicine Symposium"
Place: Durham
Info: Cindi Easterling, Box 3306, Duke University Medical Center, Durham, NC 27710. 919/684-6485

October 18
"Malpractice Awareness — Stat"
Place: Asheville
Info: Wayne Parker, Medical Mutual Insurance Company, Box 27444, Raleigh, NC 27611. 919/828-9334

October 19
"Cerebrovascular Accidents, Acute Care and Rehabilitation"
Place: Sanford
Credit: 2 hours Category I AMA
Info: Robert Cline, M.D., Central Carolina Hospital, 1135 Carthage Street, Sanford, NC 27330. 919/774-4100, ext. 394

Out of State

April 11-13

"Gold Coast Seminar: Medicine"
Place: West Palm Beach, FL
Credit: 8 hours
Info: Cindi Easterling, Box 3306, Duke University Medical Center, Durham, NC 27710. 919/684-6485

April 13-15

"First Annual Symposium on Aging"
Place: Knoxville, TN
Info: Sheila Gordon, Box 1788, East Tennessee Baptist Hospital, Knoxville, TN 37901. 615/632-5061

April 18-29

(Application deadline February 2)
"Clinical Cytopathology for Pathologists"
Place: Baltimore, MD
Credit: 125 hours
Info: John K. Frost, M.D., 110 Pathology Building, The Johns Hopkins Hospital, Baltimore, MD 21205

April 22-24

"Medical Staff Leadership Seminar"
Place: Hilton Head, SC
Fee: $220 SMA members, $275 nonmembers
Info: Jeanette Stone, Southern Medical Association, Box 2446, Birmingham, AL 35201, 205/323-4400

April 29-May 1

"Emergency Medicine for the Primary Care Physician"
Place: Williamsburg, VA
Fee: $195
Info: Randy Casey, Box 48, MCV Station, Richmond, VA 23298. 804/786-0494

April 23-30

"Controversies in Obstetrical Cancer"
Place: Caribbean Cruise
Info: W. B. Wood, M.D., Director CME, 231 MacNider 202H, UNC School of Medicine, Chapel Hill, NC 27514. 919/962-2118

May 2-4

"Gold Coast Seminar: OB/GYN"
Place: West Palm Beach, FL
Credit: 20 hours
Info: Cindi Easterling, Box 3306, Duke University Medical Center, Durham, NC 27710. 919/684-6485

May 4-7

"64th Annual Meeting, The Virginia Society of Ophthalmology and Otolaryngology, Inc."
Place: Charlottesville, VA
Info: Donna Strawderman, 4205 Dover Road, Richmond, VA 23221. 804/353-2721

May 6-8

"Regional Postgraduate Course"
Place: Lexington, KY
Fee: $15/hour SMA members, $22.50/hour nonmembers
Info: Jeanette Stone, Southern Medical Association, Box 2446, Birmingham, AL 35201. 205/323-4400

May 13-15

"Abdominal Imaging"
Place: Hilton Head Island, SC
Fee: $300 ($200 residents and fellows)
Credit: 20 hours
Info: W. B. Wood, M.D., 231 MacNider 202H, UNC School of Medicine, Chapel Hill, NC 27514. 919/962-2118

June 10-12

"Practical Dermatology for the Non-Dermatologist"
Place: Williamsburg, VA
Info: W. B. Wood, M.D., 231 MacNider 202H, UNC School of Medicine, Chapel Hill, NC 27514. 919/962-2118

June 16-19

"Dermatology for the Non-Dermatologist"
Place: Myrtle Beach, SC
Fee: $325 ($175 residents and interns)
Credit: 15 hours AMA
Info: Angelika Langen, Box 3135, Duke University Medical Center, Durham, NC 27710. 919/684-5337

July 4-9

"Midsummer Family Practice Digest"
Place: Myrtle Beach, SC
Credit: 30 hours AAFP
Info: NC Academy of Family Physicians, Box 20146, Raleigh, NC 27619. 919/781-6467

July 19-23

"Sixth Annual Symposium on Contemporary Clinical Neurology"
Place: Hilton Head Island, SC
Info: Joan Sullivan, Department of Neurology, Vanderbilt University School of Medicine, Nashville, TN 37212.

July 31-August 4

"Duke University Trauma Conference"
Place: Myrtle Beach, SC
Credit: 21 hours, AMA, ACEP
Info: Rita Weber, R.N., Box 3869, Duke University Medical Center, Durham, NC 27710. 919/684-2237

August 1-5

"Eleventh Annual Beach Workshop"
Place: Myrtle Beach, SC
Fee: $200
Credit: 20 hours Category 1 AMA
Info: Emery C. Miller, M.D., Bowman Gray School of Medicine, Winston-Salem, NC 27103. 919/748-4450

The items listed in this column cover the six months immediately following publication. Requests for listing should be mailed to Patricia Hodgson, Managing Editor, *North Carolina Medical Journal*, P.O. Box 3910, Duke University Medical Center, Durham, NC 27710.

North Carolina Medical Society Auxiliary

Retirement Issues for the Medical Family

Physicians never retire! Although often true in the past, this may no longer be the case in the coming years. Disillusioned by the increasing malpractice insurance premiums, the bureaucratic edicts, the red tape of third party payers, the need to keep up with new technology, and competition from the large numbers of young doctors entering practice, many physicians are now actively considering retirement as a viable possibility.

Retirement may have pitfalls, however, for both the physician and spouse. The sense of power and control in medical practice is often intoxicating and difficult to relinquish. For some individuals, medicine has been their whole life and interest in other activities is non-existent. Physician's wives have expressed concern about the psychological aspects of retirement on their husbands, especially as to how they will fill unstructured free time. There are few data on the response of husbands of female physicians who are retiring, but since so many female physicians have been married to male physicians there might be mutual anticipation of free time and perhaps an easier adjustment.

The American Medical Association has started to offer pre-retirement workshops. Over 500 prospective medical retirees and their spouses have attended these sessions. Suggestions are offered to ease the transition into retirement both psychologically and financially. The question is first asked: Is retirement for you? Spouses and physicians

must consider the following as possible contraindications to full retirement: if the physician is a workaholic, if the family plans to live off the interest from current funds (which may be unrealistic), if the physician is consciously impressed with his status as a physician, or if he is running away from medicine to find "something better."

It has also been suggested that retired physicians should retain a part-time association with medicine — part time practice, nursing home care, a position at a blood bank. A list of 33 model activities for retired physicians is available from the American Association of Senior Physicians, 536 North State Street, Chicago, Illinois 60610. Project USA, located at the same address, finds temporary work positions for physicians at public health sites nationwide — a way to combine part-time practice and travel.

All physicians and their families should plan ahead for retirement, both psychologically and financially. Authorities agree that for everyone the key to successful retirement is retiring *to* something, rather than *away* from something. It is important for physicians to cultivate interests outside medicine and then retirement may be the opportunity for a second career or, at the minimum, a chance for further self-fulfillment. Spouses should be totally involved in retirement planning and it's never too early to start!

Anita D. Taylor, M.A. Ed.
Counselor for Professional Families
Winston-Salem, NC

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Charles Arthur Peach (OBG), 110 W. Grover Street, Shelby 28150

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FRANKLIN

Karen Romaine Matthews (GP), P.O. Box 111, Bunn 27508

NIH Supports Research in Medicine by Profit-Making Small Businesses

P.L. 97-219, an amendment to the Small Business Act, requires the agencies of the Public Health Service (PHS) and certain other federal agencies to set aside a specified amount of their research and development (R&D) budgets for a Small Business Innovative Research (SBIR) Program. The purpose of this legislation is to:

1) stimulate technological innovation;
2) use small business to meet federal research and development needs;
3) increase private sector commercialization of innovations derived from federal research and development; and
4) foster and encourage participation by minority and disadvantaged persons in technological innovation.

The Small Business Innovation Development Act is intended to promote technological innovation with the American small business community and thereby create jobs, augment industrial productivity, increase competition, and spur economic growth. Small businesses traditionally have been both important sources of technological innovations and cost-effective performers of R&D. The new legislation should give the small business sector an increased role in the federal R&D effort, as well as attract private capital to commercialize the results of federally funded research.

The PHS SBIR Program

The SBIR Program will consist of the following three phases:

Phase I: establishing the technical merit and feasibility of R&D ideas which may ultimately lead to commercial products or services.

Phase II: indepth development of R&D ideas proposed in Phase I which are likely to result in commercial products or services, with special consideration given to proposed projects demonstrating prospective private capital commitments for commercial applications. (Only Phase I awardees are eligible to apply for Phase II funding.)

Phase III: only where appropriate, the involvement of private capital for commercializing the results of R&D funded by a federal agency, or the involvement of non-SBIR funded contracts with a federal agency for products or processes intended for use by the U.S. government.

The purpose of this solicitation is to invite Phase I grant

applications from small businesses that have the technological expertise to contribute to the R&D mission of the PHS agencies/offices participating in the SBIR Program. The PHS expects to implement its SBIR Program principally through the grant instrument although, at a future date, solicitations may also be issued for cooperative agreement applications and contract proposals.

This solicitation outlines the objectives of the PHS SBIR Program, the eligibility requirements for those organizations wishing to participate, and the research grant application and review processes. It also provides general information on each participating agency's program areas and on those R&D needs and opportunities which lend themselves to performance by small businesses.

Although areas of special programmatic interest or priority are described in the PROGRAM DESCRIPTIONS section of this solicitation, grant applications will be considered in any area within the mission of a participating PHS agency/office, unless otherwise specifically excluded. In keeping with congressional intent, small businesses are encouraged to submit applications for proposed research in any program area that falls within the purview of the PHS.

Amount and Period of Support

Phase I: Awards of approximately $35,000 for direct costs for a period normally not to exceed 6 months.

Phase II:* Awards, in annual increments, may be made for a period not to exceed 5 years. There is no specific limitation on the number or dollar amount of these awards. However, budget requests should be commensurate with the scope and level of effort of the proposed research, taking into consideration any other sources of support available for such research.

Eligibility

Each organization submitting a grant application under the PHS SBIR Program must qualify as a small business in accordance with the definition given in the section below. Two-thirds of each SBIR project must be carried out in the small business firm, and the primary employment of the principal investigator must be with the firm at the time of award and during the conduct of the proposed project. Primary employment means that more than one-half of the principal investigator's time is spent with the small business employer.

Definitions

A "small business" is an organization, including its affiliates, which (1) is independently owned and operated for profit, is not dominant in its field of operation and can further qualify under the following size standard: not more than 500 employees (full-time, part-time, temporary or other) during the previous 12-month period in all affiliated firms owned or controlled by a single parent firm; and (2) is the primary source of employment of the principal investigator of the proposed R&D project at the time of award and during the conduct of the proposed research.

* ADAMHA's Phase II grants will initially be made for an average of $105,000 per year for direct costs and for a period not to exceed 3 years.

Preparation and Submission of Grant Applications

Form PHS (Rev. 5/82) must be used in applying for PHS research grants. Supplementary instructions are available for the preparation of SBIR grant applications. Therefore, when requesting a PHS 398 application kit, please be sure to specify the SBIR Program. Application materials may be obtained from: Office of Grant Inquiries, Division of Research Grants, Westwood Building, Room 449, National Institutes of Health, Bethesda, Maryland 20205. Instructions for submission of grant applications are in Form PHS 398.

News Notes

The Bowman Gray School of Medicine Wake Forest University

A state-supported program, headquartered at the Bowman Gray/Baptist Hospital Medical Center, is attacking the problem of infant mortality by having nurses and doctors help other health professionals to update old skills and/or learn new skills for treating high risk infants.

The program, begun in the fall of 1982, is run by a team of one doctor and two nurses. Both registered nurses are involved in teaching as well as having nursing responsibilities in the medical center's neonatal intensive care nursery.

One measure of the program's success is the fact that high risk infants sent to the medical center's intensive care nursery from hospitals throughout northwest North Carolina increasingly are in more stable condition when they arrive. That, the nurses think, is a result of the skills used in preparing those babies for the trip to Winston-Salem.

The program involves a hospital sending to Winston-Salem a team consisting of a doctor and two nurses. The time that team members spend studying at the medical center varies from one day for the doctor to almost two weeks for the nurses.

The program is a variation of the Virginia Plan, which trains nurses for a few days. The nurses return to their home hospital as educators as well as nurses, sharing their new knowledge and improved skills through a continuing education program which relies on a self-study, three-volume set of books.

The nurses who train in the new program also are intended to be the principal coordinators and teachers in an informal continuing education program using the three-volume set. Six hospitals have thus far elected to send teams to the Bowman Gray/Baptist Hospital Medical Center. The March of Dimes has made grants to each of the hospitals to help meet the program's costs, and has provided sets of the Virginia Plan books to the participating hospitals.

The Bowman Gray School of Medicine has developed an award-winning course on cancer prevention which it plans

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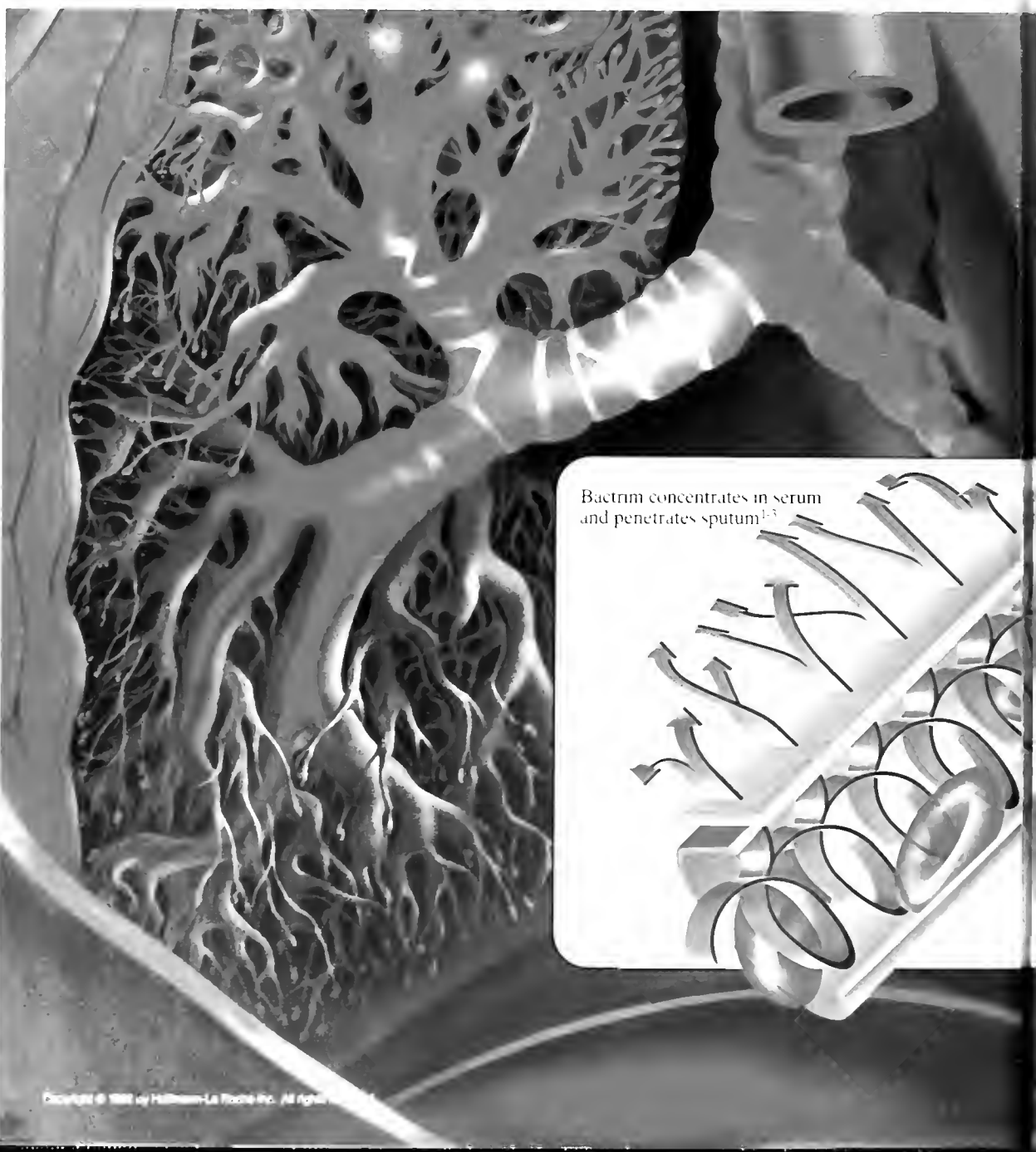
J-8434 July 1984

Bactrim™ attacks the
(trimethoprim and sulfamethoxazole/Roche)
in acute exacerbations



ROCHE

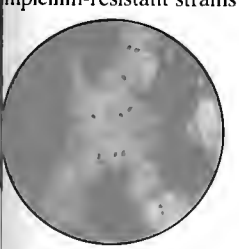
major pathogens of chronic bronchitis*

Bactrim clears sputum of susceptible bacteria

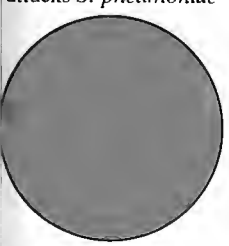
In sputum cultures from patients with acute exacerbations of chronic bronchitis, *H. influenzae* and *S. pneumoniae* are isolated more often than any other pathogens.[4,5] One study of transtracheal aspirates from 76 patients with acute exacerbations found that 80% of the isolates were of these two pathogens.[5]

Bactrim is effective *in vitro* against most strains of both *S. pneumoniae* and *H. influenzae*—even ampicillin-resistant strains. And in acute exacerbations of chronic bronchitis involving these two pathogens, sputum cultures taken seven days after a two-week course of therapy showed that Bactrim eradicated these bacteria in 91% (50 of 55) of the patients treated.[6]

acks *H. influenzae*—even
mpicillin-resistant strains



attacks *S. pneumoniae*



Bactrim reduces coughing and sputum production

In three double-blind comparisons with ampicillin *q.i.d.*, Bactrim DS proved equally effective on all clinical parameters.[7-9] Bactrim reduced the frequency and severity of coughing, reduced the amount of sputum produced and cleared the sputum of purulence.

Bactrim has the added advantages of *b.i.d.* dosage convenience and a lower incidence of diarrhea than with ampicillin, and it is useful in patients allergic to penicillins.

Bactrim also proved more effective than tetracyclines in 10 clinical trials involving nearly 700 patients.[10] Overall clinical condition of the patients, changes in sputum purulence, reduction in sputum volume and microbiological clearance of pathogens—all improved more with Bactrim therapy than with tetracyclines. G.I. side effects occurred in only 7% of patients treated with Bactrim compared with 12% of tetracycline-treated patients. (See Adverse Reactions in summary of product information on next page.)

Bactrim is contraindicated in pregnancy at term and nursing mothers, infants under two months of age, documented megaloblastic anemia due to folate deficiency and hypersensitivity.

Bactrim DS. For acute exacerbations of chronic bronchitis in adults* when it offers an advantage over single-agent antibacterials.

References: 1. Hughes DTD, Bye A, Hodder P: *Adv Antimicrob Antineoplastic Chemother 1/2*:1105-1106, 1971. **2.** Jordan GW *et al: Can Med Assoc J 112*:91S-95S, Jun 14, 1975. **3.** Beck H, Pechere JC: *Prog Antimicrob Anticancer Chemother 1*:663-667, 1969. **4.** Quintiliani R: Microbiological and therapeutic considerations in exacerbations of chronic bronchitis, in *Chronic Bronchitis and Its Acute Exacerbations: Current Diagnostic and Therapeutic Concepts;* Princeton Junction, NJ, Communications Media for Education, Inc., 1980, pp. 9-12. **5.** Schreiner A *et al: Infection 6*(2):54-56, 1978. **6.** Data on file, Hoffmann-La Roche Inc., Nutley, NJ. **7.** Chodosh S: Treatment of acute exacerbations of chronic bronchitis: results of a double-blind crossover clinical trial, in *Chronic Bronchitis and Its Acute Exacerbations: Current Diagnostic and Therapeutic Concepts. Op. cit.*, pp. 15-16. **8.** Chervinsky P: Double-blind clinical comparisons between trimethoprim-sulfamethoxazole (Bactrim™) and ampicillin in the treatment of bronchitic exacerbations. *Ibid.*, pp. 17-18. **9.** Dulfano MJ: Trimethoprim-sulfamethoxazole vs. ampicillin in the treatment of exacerbations of chronic bronchitis. *Ibid.*, pp. 19-20. **10.** Medici TC: Trimethoprim-sulfamethoxazole (Bactrim™) in treating acute exacerbations of chronic bronchitis: summary of European clinical experience. *Ibid.*, pp. 13-14.

Economical b.i.d.

Bactrim™ DS

(160 mg trimethoprim and 800 mg sulfamethoxazole/Roche)

*Due to susceptible organisms. **Please see next page for summary of product information.**

Bactrim™

(trimethoprim and sulfamethoxazole/Roche)

Before prescribing, please consult complete product information, a summary of which follows:

Indications and Usage: For the treatment of urinary tract infections due to susceptible strains of the following organisms: *Escherichia coli, Klebsiella-Enterobacter, Proteus mirabilis, Proteus vulgaris, Proteus morganii.* It is recommended that initial episodes of uncomplicated urinary tract infections be treated with a single effective antibacterial agent rather than the combination. *Note:* The increasing frequency of resistant organisms limits the usefulness of all antibacterials, especially in these urinary tract infections.

For acute otitis media in children due to susceptible strains of *Haemophilus influenzae* or *Streptococcus pneumoniae* when in physician's judgment it offers an advantage over other antimicrobials. To date, there are limited data on the safety of repeated use of Bactrim in children under two years of age. Bactrim is not indicated for prophylactic or prolonged administration in otitis media at any age.

For acute exacerbations of chronic bronchitis in adults due to susceptible strains of *Haemophilus influenzae* or *Streptococcus pneumoniae* when in physician's judgment it offers an advantage over a single antimicrobial agent.

For enteritis due to susceptible strains of *Shigella flexneri* and *Shigella sonnei* when antibacterial therapy is indicated.

Also for the treatment of documented *Pneumocystis carinii* pneumonitis.

Contraindications: Hypersensitivity to trimethoprim or sulfonamides, patients with documented megaloblastic anemia due to folate deficiency, pregnancy at term, nursing mothers because sulfonamides are excreted in human milk and may cause kernicterus, infants less than 2 months of age.

Warnings: BACTRIM SHOULD NOT BE USED TO TREAT STREPTOCOCCAL PHARYNGITIS. Clinical studies show that patients with group A β-hemolytic streptococcal tonsillopharyngitis have higher incidence of bacteriologic failure when treated with Bactrim than do those treated with penicillin. Deaths from hypersensitivity reactions, agranulocytosis, aplastic anemia and other blood dyscrasias have been associated with sulfonamides. Experience with trimethoprim is much more limited but occasional interference with hematopoiesis has been reported as well as an increased incidence of thrombopenia with purpura in elderly patients on certain diuretics, primarily thiazides. Sore throat, fever, pallor, purpura or jaundice may be early signs of serious blood disorders. Frequent CBC's are recommended; therapy should be discontinued if a significantly reduced count of any formed blood element is noted.

Precautions: *General:* Use cautiously in patients with impaired renal or hepatic function, possible folate deficiency, severe allergy or bronchial asthma. In patients with glucose-6-phosphate dehydrogenase deficiency, hemolysis, frequently dose-related, may occur. During therapy, maintain adequate fluid intake and perform frequent urinalyses, with careful microscopic examination, and renal function tests, particularly where there is impaired renal function. Bactrim may prolong prothrombin time in those receiving warfarin; reassess coagulation time when administering Bactrim to these patients.

Pregnancy: Teratogenic Effects: Pregnancy Category C: Because trimethoprim and sulfamethoxazole may interfere with folic acid metabolism, use during pregnancy only if potential benefits justify the potential risk to the fetus.

Adverse Reactions: All major reactions to sulfonamides and trimethoprim are included, even if not reported with Bactrim. *Blood dyscrasias:* Agranulocytosis, aplastic anemia, megaloblastic anemia, thrombopenia, leukopenia, hemolytic anemia, purpura, hypoprothrombinemia and methemoglobinemia. *Allergic reactions:* Erythema multiforme, Stevens-Johnson syndrome, generalized skin eruptions, epidermal necrolysis, urticaria, serum sickness, pruritus, exfoliative dermatitis, anaphylactoid reactions, periorbital edema, conjunctival and scleral injection, photosensitization, arthralgia and allergic myocarditis. *Gastrointestinal reactions:* Glossitis, stomatitis, nausea, emesis, abdominal pains, hepatitis, diarrhea, pseudomembranous colitis and pancreatitis. *CNS reactions:* Headache, peripheral neuritis, mental depression, convulsions, ataxia, hallucinations, tinnitus, vertigo, insomnia, apathy, fatigue, muscle weakness and nervousness. *Miscellaneous reactions:* Drug fever, chills, toxic nephrosis with oliguria and anuria, periarteritis nodosa and L.E. phenomenon. Due to certain chemical similarities to some goitrogens, diuretics (acetazolamide, thiazides) and oral hypoglycemic agents, sulfonamides have caused rare instances of goiter production, diuresis and hypoglycemia in patients; cross-sensitivity with these agents may exist. In rats, long-term therapy with sulfonamides has produced thyroid malignancies.

Dosage: Not recommended for infants less than two months of age.

URINARY TRACT INFECTIONS AND SHIGELLOSIS IN ADULTS AND CHILDREN, AND ACUTE OTITIS MEDIA IN CHILDREN

Adults: Usual adult dosage for urinary tract infections—1 DS tablet (double strength), 2 tablets (single strength) or 4 teasp. (20 ml) b.i.d. for 10-14 days. Use identical daily dosage for 5 days for shigellosis.

Children: Recommended dosage for children with urinary tract infections or acute otitis media—8 mg/kg trimethoprim and 40 mg/kg sulfamethoxazole per 24 hours, in two divided doses for 10 days. Use identical daily dosage for 5 days for shigellosis.

For patients with renal impairment: Use recommended dosage regimen when creatinine clearance is above 30 ml/min. If creatinine clearance is between 15 and 30 ml/min, use one-half the usual regimen. Bactrim is not recommended if creatinine clearance is below 15 ml/min.

ACUTE EXACERBATIONS OF CHRONIC BRONCHITIS IN ADULTS

Usual adult dosage: 1 DS tablet (double strength), 2 tablets (single strength) or 4 teasp. (20 ml) b.i.d. for 14 days.

PNEUMOCYSTIS CARINII PNEUMONITIS

Recommended dosage: 20 mg/kg trimethoprim and 100 mg/kg sulfamethoxazole per 24 hours in equal doses every 6 hours for 14 days. See complete product information for suggested children's dosage table.

Supplied: *Double Strength (DS) tablets,* each containing 160 mg trimethoprim and 800 mg sulfamethoxazole: bottles of 100, Tel-E-Dose® packages of 100, Prescription Paks of 20 and 28. *Tablets,* each containing 80 mg trimethoprim and 400 mg sulfamethoxazole—bottles of 100 and 500, Tel-E-Dose® packages of 100, Prescription Paks of 40. *Pediatric Suspension,* containing 40 mg trimethoprim and 200 mg sulfamethoxazole per teaspoonful (5 ml), cherry flavored—bottles of 100 ml and 16 oz (1 pint). *Suspension,* containing 40 mg trimethoprim and 200 mg sulfamethoxazole per teaspoonful (5 ml), fruit-licorice flavored—bottles of 16 oz (1 pint).

ROCHE

ROCHE LABORATORIES
Division of Hoffmann-La Roche Inc.
Nutley, New Jersey 07110

to begin marketing to physician assistant programs across the nation.

Developed over the past three years, the course focuses on making physician assistants more alert to the early signs of cancer, training them to educate patients about known cancer risks, and teaching them to use community resources in cancer prevention.

The developers of the course have received the Outstanding Practice Award in Instructional Development from the Association of Educational Communications and Technology.

Dr. Dennis Hoban, who headed the Bowman Gray task force, said the course is designed for physician assistants because the nature of cancer prevention and the role of the physician assistant in primary health care seemed to create a logical partnership. Physician assistants not only take patient histories and perform medical examinations but they also have the opportunity to do an effective job of health education with patients.

The course, which has been field tested in the Physician Assistant Program at Bowman Gray, is expected to be ready this spring for purchase by other physician assistant programs.

The course consists of four self-instructional books, a faculty guide, a test booklet and two video tapes.

Bowman Gray researchers have begun a unique project aimed at evaluating the usefulness of behavior therapy in combating the pain of rheumatoid arthritis.

Relaxation training and biofeedback techniques will be studied for their effect on the pain suffered by patients. Additional behavior therapy will be used to help patients reduce impairments caused by rheumatoid arthritis.

A $149,993 grant from the Robert Wood Johnson Foundation is supporting the research over a two and one-half year period.

There have been just three studies on the psychological aspects of treating rheumatoid arthritis, and none involved the collaboration of medical psychologists and arthritis specialists as will be the case at Bowman Gray.

Patients in the study are being divided into three groups. One will receive the standard treatment for the disease. A second group will receive that treatment plus the behavior therapy techniques. And the third group, also receiving the standard medical treatment, will share with one another ways they have found for coping with pain and impairment.

Dr. Thomas D. Long, a Roxboro physician, has been elected chairman of the Medical Center Board of the Bowman Gray School of Medicine and North Carolina Baptist Hospital.

He succeeds Leon L. Rice Jr. of Winston-Salem.

The medical center board is responsible for the overall supervision of the Bowman Gray/Baptist Hospital Medical Center.

J. Robert Philpott of Lexington was elected vice chairman of the board. Carlos Young of Shelby was elected treasurer and Mrs. June B. Crummett, assistant to the hospital president, was elected secretary.

Newly elected members of the board are Joe E. Coleman of Tabor City, Ronald Deal of Hickory, C. Irving Grigg of Kernersville, and L. Glenn Orr Jr. of Winston-Salem. Dr. Richard T. Myers, professor and chairman of Bowman Gray's Department of Surgery, was appointed as the professional staff member.

North Carolina Baptist Hospital, Bowman Gray's principal teaching hospital, has appointed Richard M. Heriot as vice president for patient care services.

Heriot comes to Baptist from the University of Iowa Hospital and Clinics, the nation's largest university-owned hospital, where he was senior assistant to the director.

Beginning in 1984, nurses in the state's northwest counties will have the opportunity to earn the B.S.N. degree while continuing to work full time.

The outreach program will be offered by the School of Nursing of the University of North Carolina at Greensboro in cooperation with the Northwest Area Health Education Center (AHEC) headquartered at Bowman Gray.

The outreach program is designed to permit nurses to earn their degree over a two-year period, attending classes one day a week in the first year and two days a week in the second year.

Bowman Gray researchers have found a promising new area for research on high blood pressure as the result of continuing work on endoxin, a hormone discovered at the school two years ago.

In the course of their work over the past year and a half, the researchers learned of an entire class of chemicals in the body with the potential for causing hypertension. The chemicals, a type of pituitary peptide made in the brain, are structurally similar to endoxin and act like the hormone. In small amounts, the chemicals aid the body in ridding itself of excess sodium, while in larger amounts they cause an increase in blood pressure.

The work has shown that endoxin is not unique in its dual role of helping the kidneys in small amounts while increasing blood pressure in larger amounts.

The peptides have been found to affect the blood pressure by working through the nervous system. That has led the Bowman Gray researchers to re-evaluate their previous theory on how endoxin works. The earlier idea that endoxin works directly on the vessel walls to increase blood pressure has been modified in favor of endoxin working through the nervous system.

Dr. Thomas E. Clark, associate professor of sociology, has begun a two-year term as president of the American Association of Marriage and Family Therapy.

The 42-year-old association, with its 14,000 members, is the principal marriage and family therapy organization in the nation. It sets the educational and training standards for the profession of marriage and family therapy and provides continuing education for its members.

Clark has served the organization as its president-elect for the past two years. He also served two terms on the association's board of directors, and as president of the association's North Carolina chapter.

Dr. Francis M. James III, professor of anesthesia, has been named chairman of Bowman Gray's Department of Anesthesia. He succeeds Dr. Thomas H. Irving, who was head of anesthesia at the medical center for the past 15 years. Irving asked to be relieved of his administrative duties to return to full-time teaching and patient care.

James joined the Bowman Gray faculty in 1969, and was promoted to full professor in 1977. The following year he was appointed head of the Section on Obstetric Anesthesia. He also has served as chairman of the medical school's Committee on Medical Education and is a four-time winner of teaching awards from Bowman Gray students.

Duke University Medical Center

Emotional depression is more wide-spread in our society than previously believed, according to a Duke psychiatrist.

"We're urging family doctors to be on the lookout for hidden or masked depression," said Dr. William Zung, professor of biological psychiatry. "If a patient complains that he can't sleep, and there doesn't seem to be anything organically wrong, depression may be the cause."

In a recent study involving more than 1,000 patients seen in clinics at Duke's Community and Family Medicine Program, 143 — or 14 percent — were found to have significant symptoms of depressive disorders, almost all without knowing it.

"Clinical depression can often be treated with antidepressant drugs, but you've got to identify it before you can treat it," Zung said.

Twenty years ago Zung developed a quick and easy diagnostic test for depression. Many doctors use it in routine examinations, and it is simple enough that the average person can complete it to determine his own emotional health.

It consists of 20 statements that the patient rates according to how applicable they are to his or her state of mind and physical condition. Copies of the Self-rating Depression Scale, along with an explanation of how it works, are available free of charge to members of the medical profession by writing the CIBA Pharmaceutical Company, Division of CIBA-GEIGY Corporation, Summit, NJ 07901.

Thanks to a new surgical procedure being performed at Duke University Medical Center, patients can undergo an operation for removal of a cancerous growth from their esophagus and have the esophagus reconstructed at the same time, making rehabilitation quicker and easier.

One of the first surgeons in the country to do the microvascular surgery, Dr. Boyce Cole has now performed more than 20 of the grafts, using a portion of the patient's small intestine to replace the esophagus. Dr. Hilliard Seigler, professor of surgery, is also performing the operation.

"We're very happy with this technique," Cole added. "We've had no graft failures at surgery. We can rehabilitate a patient in seven to 10 days or less. We had an 88-year-old patient who was discharged from the hospital in nine days and was eating normally at home."

Using an electron microscope, physicians at Duke University Medical Center can now diagnose breast cancer from an isolated lymph node, even when the original breast tumor cannot be detected clinically.

"We looked at five cases," said Dr. Kenneth McCarty, associate professor of pathology. "When lymph nodes were biopsied (from each woman) and the tissue examined under a light microscope, various diagnoses were made, including one for melanoma, lymphoma for another and undifferentiated carcinoma for still another."

When the tissue was then examined under an electron microscope, he added, a firm diagnosis of breast cancer was established.

The firm diagnosis led to a favorable prognosis for these women, McCarty said, in contrast to the usually dim outlook for patients whose cancer has spread from a primary tumor. With this procedure, women needing aggressive treatment can get it sooner than they would have in the past, he said, thus increasing their chances of survival.

A surgical procedure used at Duke University Medical Center can help make normal speech possible for children born with cleft palates. In about 75 percent of the children, the first surgery to close the cleft palate is often sufficient for the palate to function properly, according to Duke plastic surgeons. But the remaining children need another operation to help the soft palate close off the nasal airway so the child can speak properly.

The second procedure, modified at Duke from a technique developed by a South American surgeon, is being performed by plastic surgeons Drs. William Barwick, Gregory Georgiade, Ronald Riefkohl and Donald Serafin.

Tina Williams lost her thumb in a waterskiing accident in 1981. Dr. James Urbaniak, a surgeon at Duke, gave it back to her using a new procedure that involves unwrapping the skin, toenail, nerves and blood vessels from the large toe and placing it around a bone graft on the missing thumb.

Until now, creating a new "thumb" following an amputation usually meant sacrificing the great toe, he said. But thanks to this new microsurgical technique, the patient looks as if she still has her toe, and her foot functions normally.

The best candidates for the graft are people who have lost their thumb just at the web space above the base of the thumb, particularly where the loss is on the dominant hand, Urbaniak said. The procedure is not suitable for children under 10 because the bone will not grow once it is attached, he said.

"We have performed nine transplants of this type and so far all nine have been successful," he said. "All walk

without a limp and wear regular shoes. Women can wear open-toed shoes and look fine in them."

A brochure on poisoning prepared by the Duke Poison Control Center in conjunction with the Department of Public Relations has been selected for inclusion in the Consumer Health Information Service.

Out of all the poisoning pamphlets reviewed, the Duke brochure, "Poison at Work," was selected as the best available on poisoning, according to Dr. Shirley Osterhout, director of the Poison Control Center.

The pamphlet may be obtained by sending a self-addressed stamped envelope to the Duke Poison Control Center, Box 3007, Duke University Medical Center, Durham, NC 27710.

A slide-tape program on poisoning is also available for use by groups. For more information on the slide-tape show, contact Dr. Osterhout or Richard Drew at the Duke Poison Control Center 919/684-2498.

Duke University Medical Center researchers have reported a four-fold increase in the risk of a childhood cancer, rhabdomyosarcoma (RMS), among children whose fathers smoked cigarettes.

In a preliminary study of 33 North Carolina children diagnosed with RMS during a 10-year period, fathers' smoking was one of several factors associated with the disease, according to Dr. Seymour Grufferman, associate professor of pediatrics and director of the Prevention and Control Program of the Duke Comprehensive Cancer Center.

In the past 18 months, a number of new units or centers have opened at Duke University Medical Center.

The oldest of the new is the Duke Outpatient Surgery Unit. According to Dr. Lloyd Redick, the 12-bed unit enables patients who need relatively simple operations to be in and out of the hospital in one day.

The 16-bed Clinical Specialty Unit offers treatment for a variety of psychiatric illnesses, particularly chronic pain and anorexia nervosa. The unit has been filled to capacity almost since its opening and has a waiting list of patients from North Carolina and beyond, said Dr. Randal France, assistant professor of psychosomatic medicine.

The Adolescent Psychiatry Unit, directed by Dr. J. David Jones, has 18 beds that are filled to capacity. "The unit provides the staff an opportunity to do more for the adolescent patient," Jones said. "The patients seem happy, and the treatment results have been good."

The Duke University Preventive Approach to Cardiology (DUPAC) had its grand opening last year at a new building overlooking Wallace Wade Stadium. The program offers medically supervised, individually prescribed exercise plans for heart patients. With the new building came upgraded therapeutic equipment, an indoor track for low-functional patients and locker facilities. Paul Koisch is administrative manager.

The South Division Surgical Intensive Care Unit recently celebrated its first birthday. The four-bed unit, originally intended for ENT and gynecology patients, also handles non-surgical patients from other units, said head nurse Sue Avery.

Patients can receive a complete cardiac evaluation in one day at the Cardiac Diagnostic Unit, and the referring physician can usually have the results that same day. Dr. Joseph Kisslo, associate professor of cardiology, is unit director.

More than 100 patients have been evaluated in the Center for the Advanced Study of Epilepsy and Sleep Disorders since it opened in May of last year. Dr. J. Scott Luther said the center's team of physicians has, in a majority of cases, identified the patients' problems with portable monitoring equipment that records epileptic seizures and disorders in the patients' sleeping patterns.

The Eye Center's Short-term Surgery Program began accepting patients last September. According to director Dr. Michael Cobo, 40 to 50 patients have undergone eye

operations and returned home the same day. "Patients are less anxious about eye surgery when they find out it can be performed in one day without hospitalization," Cobo said. "There are also considerable breaks with insurance, and the total bill is much less." The program is primarily for patients who need surgery for cataracts and eye muscle problems or who need plastic surgery. It is not for patients with serious eye injuries or disease.

Routine gynecological and obstetrical care became easily available to the community last September with the opening of the new Ob-Gyn Health Center, a satellite clinic of the Duke Women's Clinic. Located in Durham on Chapel Hill Boulevard, the health center is staffed by Duke physicians and is aimed at women who need low-risk prenatal exams and gynecological exams, said Dr. Frederick Jelovsek. It is open from 8:30 a.m. to 5 p.m. Monday through Friday, and from 6 to 8 p.m. Wednesday evenings. Mondays and Thursdays are devoted to seeing patients with premenstrual syndrome.

The most recent newcomer to Duke's list of specialized units and centers is the Combined Medical Specialties Unit, which opened last November. The 10-bed unit is co-directed by Drs. Michael McLeod and Trig Brown in medicine and Dr. Alan Stoudemire in psychiatry. Treatment includes a comprehensive medical and psychiatric evaluation for patients with stress-related illnesses and other disorders accompanied by depression and anxiety.

A cure for baldness may no longer be just balderdash. A drug under study at Duke University Medical Center may actually improve hair growth in some people with male-pattern baldness.

In a drug company's preliminary study of 150 people, 30 percent showed improvement in hair growth, said Dr. Khaled El-Hoshy, one of the researchers involved in Duke's project.

"With male-pattern baldness, it appears that the hair follicle has gone to sleep and we don't know how to wake it up," said Dr. Sheldon Pinnell, study director. "This drug, when taken orally, can grow hair, not only on the scalp, but everywhere on the body. The hope is that by applying it topically, we can target it and get specific hair follicles to work."

The study will be conducted over the course of a year. If the drug is successful, Pinnell said, it could be approved by the Food and Drug Administration within five years.

Aerobic exercise seems to make people feel better, mentally as well as physically, according to a study by Duke researchers. "Exercise improves mood states, especially anxiety, tension and fatigue," said Dr. James Blumenthal, assistant professor in the Department of Psychiatry. "Although people have reported feeling less tense when they exercise regularly, to our knowledge this is the first systematic study that confirms these effects."

There is evidence that emotions may affect the way the body regulates itself and the course of some illnesses, according to Dr. Jeffrey Houpt, chief of psychosomatic medicine in the Department of Psychiatry.

Emotions may affect the biological system protecting the body from disease, Houpt told an audience at "Health Night Out," the free public lecture series offered at Duke. It now appears that certain chemicals that play a role in anxiety and depression can affect the function of protective white blood cells and hormones, he said.

More than 50 percent of heart attack victims show signs of depression in the hospital. But depression three months after release can contribute to another heart attack, he said.

East Carolina University School of Medicine

Nearly 40 physicians from North Carolina attended workshops in December at the East Carolina University School of Medicine to learn more about the use of the flexible fiber-optic sigmoidoscope. The one-day workshop will be repeated June 8 and June 9 at the medical school.

The workshops included a morning lecture series that covered the development of colon cancer, theory of fiber-optic instruments, the maintenance of the equipment and preparation of patients. In the afternoon sessions physicians had the opportunity to perform procedures on colon models that realistically simulate lesions in a life-size configuration of the lower bowel.

Physicians were invited to bring members of their office staffs who assist them, and many of the physicians attending the session invited patients to accompany them so that an actual procedure could be performed under supervision.

In the past most of these endoscopic procedures have been performed by gastroenterologists. The new sigmoidoscope permits wider application of the procedure by primary care physicians. The School of Medicine is concentrating on providing opportunities for additional training and experience in this and other screening tests by family practitioners.

The flexible fiber-optic sigmoidoscope is manufactured by Olympus Corporation of America, which provided the colon models, instruments and funds to support the workshops.

The new radiation therapy center at the East Carolina University School of Medicine completes the triad of services needed in the region for modern and complete cancer care, state Sen. Harold D. Hardison, D-Deep Run, told 150 guests at the groundbreaking for the facility.

Hardison was the keynote speaker for the Feb. 19 ceremony that marked the start of construction on the $5.2 million center, a facility that will be furnished with state-of-the-art equipment and will enable physicians to deliver total cancer care to their patients.

The full spectrum of cancer treatment includes surgery, chemotherapy and radiation therapy. Radiation therapy is very effective in curing cancer and in preventing its spread. It can also decrease the rate of cancer growth, alleviate symptoms and ease pain.

Radiation therapy is a well established, effective treatment against many forms of cancer, including early stage

Hodgkin's Disease, cancer of the lymph glands, testicular cancer, brain cancer and breast cancer. Most patients require daily treatments, depending on the stage and location of the disease.

The new center will support existing radiation therapy units in New Bern, Kinston and Goldsboro, ECU Vice Chancellor and Medical School Dean William E. Laupus said. He said ECU physicians will continue to work closely with these units.

The ECU facility will be located between the medical school's Brody Medical Sciences Building and Pitt County Memorial Hospital. It will have two linear accelerators, a six-million-electron-volt unit and a 20-million-electron-volt unit. The selection of radiation beams generated by these units will enable physicians to treat deep-seated or superficial tumors.

The facility will also have an advanced radiation therapy simulator to provide the high quality radiographic images, or x-rays, necessary for planning radiation treatment and determining appropriate doses.

Staff at the center will include radiotherapists, radiation oncologists, physicists and other specialists. The staff will also include nurses, radiation technologists, patient support and office staff.

Joining Hardison and Laupus on the afternoon groundbreaking program were ECU Chancellor John M. Howell, ECU Board Chairman C. Ralph Kinsey, Pitt Memorial Board Chairman G. Henry Leslie, UNC Board of Governors representative David J. Whichard II, Pitt County Commissioners Chairman Charles P. Gaskins and Pitt Memorial President Jack W. Richardson.

A husband and wife team who are specialists in pediatric-adolescent gynecology and fetoscopy have joined the School of Medicine.

Dr. Joseph F. Russo and Dr. Karen Filkins assumed their responsibilities in the Department of Obstetrics and Gynecology in January. Both are assistant professors.

Russo is a specialist in gynecology for the younger patient, including newborns, children and teenagers. He will serve as director of the division of pediatric-adolescent gynecology and developmental abnormalities in the Department of Obstetrics and Gynecology.

Filkins will head the department's genetics division and direct evaluations for women who have had problem pregnancies. She is a specialist in fetoscopy, a technique that permits direct visualization of the unborn baby that is useful in diagnosing genetic abnormalities.

Russo formerly was assistant professor of obstetrics and gynecology at the University of Medicine and Dentistry — New Jersey Medical School, where he was director of the pediatric-adolescent gynecology division and the sexually transmitted disease laboratory.

He also served as the gynecology consultant at Children's Hospital — United Hospitals of Newark, NJ, and assistant medical director for Essex County Planned Parenthood.

Russo received his undergraduate degree from Cornell University and his medical degree from the University of Medicine and Dentistry — New Jersey Medical School. He

completed his residency training at New York University-Bellevue Medical Center. He is the author of several textbook chapters on teenage pregnancy.

Filkins formerly was assistant professor of obstetrics and gynecology at the University of Medicine and Dentistry of New Jersey and director of the obstetrical genetics division at University Hospital. She was an active member of the New Jersey Task Force on Genetics.

Filkins is the editor of *Prenatal Genetics*, a volume in the series *Human and Medical Genetics* to be published in 1984 by Marcel Dekker Publishers of New York. She is also the author of several chapters in medical textbooks.

Filkins received her undergraduate degree from the College of St. Elizabeth in Covent Station, NJ, and her medical degree from the University of Medicine and Dentistry of New Jersey. She completed her residency training at New York University and Bellevue Medical Center.

Dr. Lesly T. Mega has joined the School of Medicine as associate professor in the Department of Psychiatric Medicine.

Prior to her appointment, Mega was director of child and adolescent psychiatry at Hackensack Medical Center in Hackensack, NJ. She also was assistant clinical professor in psychiatry at the College of Medicine and Dentistry of the New Jersey Medical School in Newark, NJ, and on the teaching staff in psychiatry at New York Medical College in New York City.

Mega completed her undergraduate and medical degrees at Boston University. She completed her residency training in general psychiatry at the Metropolitan Hospital Center, a teaching hospital of New York Medical College. She was a fellow in child and adolescent psychiatry at the Medical College of Virginia's Virginia Treatment Center for Children in Richmond.

Dr. Jose F. Caro has been named associate professor of medicine and section head of endocrinology and metabolism.

A native of Granada, Spain, Caro received his medical degree from the School of Medicine in Madrid, Spain. He completed his residency training in internal medicine at Thomas Jefferson University in Philadelphia, PA, where he was a fellow in endocrinology and metabolism during 1977-78. He was also a fellow and instructor in endocrinology and metabolism at the University of Rochester School of Medicine and Dentistry at Rochester, NY, during 1978-80.

Prior to his appointment, Caro was assistant professor of medicine in the section of endocrinology and metabolism at Thomas Jefferson University and a consultant in endocrinology and metabolism with Veterans Administration Hospital in Wilmington, DE, and with Wills Eye Hospital in Philadelphia, PA.

Caro's research involves the mechanism of insulin action in diabetes mellitus. This research has been funded by the Juvenile Diabetes Foundation, the American Diabetes Association, and the National Institute of Health.

Dr. Merwin R. Dieckmann has been appointed associat professor of family medicine.

Dieckmann formerly was associate professor at Eas Tennessee State University College of Medicine in Johnso City, TN, and coordinator of clinical education for th Department of Family Practice. He also was associate with the Johnson City, Bristol and Kingsport family prac tice programs.

A native of Iowa, Dieckmann received his undergradu ate degree in chemistry from Iowa State University i Ames. He received his medical degree from the Stat University of Iowa, Iowa City. He completed his internshi at Middlesex Memorial Hospital in Middleton, CN, teaching hospital affiliated with Yale University College o Medicine.

Dieckmann is presently a U.S. Navy captain and avia tion medical officer with Naval Reserve affiliation with th 4th marine division.

University of North Carolina School of Medicine North Carolina Memorial Hospital

Just a few years ago it was unusual for a father to be present for the birth of his child, and the idea of permitting young children in the labor rooms with their mother was unthinkable.

Now the former is commonplace and the latter is beginning to gain acceptance, as more couples come to view childbirth as an event to be experienced and cherished by the whole family.

North Carolina Memorial Hospital is one of the first large teaching and referral hospitals in the country to accommodate the wishes of such couples by offering them the option of a truly family-oriented birth experience. The hospital allows children of any age to visit their mother in the labor and delivery suite, and children at least 10 years old may be present for the birth of their new brother or sister.

Children are only allowed in the "homestyle" delivery rooms, not in the obstetrical unit's operating room. All children must be accompanied by an adult other than their parents, and they must have attended an orientation session conducted by nurse Bobbie Frye.

"The kids I've worked with so far have been very well prepared by their parents," Frye said. "They already know where babies come from and have a pretty good idea of what to expect."

Frye's role is to familiarize children with the facilities and equipment they will see and to make sure they understand what is going to happen. She also takes her young charges to the hospital's nursery to see newborns and she talks with them about what new babies are like.

"Sometimes I show them slides of babies being delivered, so they won't be surprised or upset by anything they see," she added.

Dr. Linn Hatley, an assistant professor of obstetrics and gynecology, said that from a medical standpoint there is no reason why children should not be with their mothers during childbirth, if that is what the family wants.

"Obviously, that isn't for everyone, and we're not trying to force it on anyone," Hatley said. "But we feel good about offering it to people who feel this is an important part of bringing their family closer together."

Alice Adams is legally blind, but she can read a newspaper.

So can many other "blind" people if they have been prescribed one of the many specialized lens systems developed by visual scientists. In fact, about 70 percent of people labeled legally blind have some vision that can be substantially improved by corrective aids.

Low vision is the focus of a specialized eye clinic operated by Dr. Howard Lewis, clinical assistant professor.

Each week, Lewis examines patients whose vision cannot be improved by medical or surgical means or by conventional eyeglasses. His job is to evaluate the extent of their vision impairment and determine what type of low vision optical system and rehabilitation would be most appropriate.

"We never say die, no matter how low a person's vision is," Lewis said. "Even a patient whose vision is as low as 20/1,000 often can read small-column newsprint with a microscopic lens."

Alice Adams is one of Lewis' success stories. Adams, a retired Army major from Southern Pines, came to Lewis after she began losing her sight in 1968 because of a rare retinal disorder called angioid streaks. She has no sight in her left eye but has been fitted with a telescopic lens, which enables her to make the most of the vision remaining in her right eye.

"The principal thing I wanted to be able to do was read," Adams said, "but I didn't want to get into Braille or talking books."

In addition to telescopic spectacles, Lewis fitted Adams with a microscopic reading lens that had its own built-in illumination system. When her vision deteriorated beyond these capabilities, he introduced her to a video magnification system which could enlarge reading material up to 65 times.

"We try to determine what goals are most important to each patient," Lewis said. "By far, the most common need is to be able to read small-column newsprint."

Low vision patients can suffer from a wide variety of eye disorders including tunnel vision, extremely hazy vision, night blindness and disorders that block out whole portions of the visual field. The most common devices used to correct these problems are microscopic lenses, telescopic lenses, high magnification bifocals, video magnification and specialized filters.

Motivation can be the key difference between success

and failure in adapting to low vision devices, Lewis explained. Adams was warned that her lenses would not be attractive and, in fact, she has found that they frequently scare young children. But being able to recognize faces and dress herself is much more important than her appearance.

Reading with a low vision aid often requires a person to look at one word, sometimes even one syllable, at a time. "You have to have an untold amount of patience," explained Elizabeth Wilson, one of Lewis' patients from Chapel Hill. "I feel like a child just learning how to pronounce words, but at least now I can look up telephone numbers and read letters and my bank statement."

Low vision has been around as a medical specialty for 20 years, but the clinic at NC Memorial is the first for a hospital in the state. Lewis, an optometrist, has held his faculty position in the School of Medicine's department of ophthalmology for three years.

A team of physicians at North Carolina Memorial Hospital has performed three different types of operations on fetuses still in their mothers' wombs to correct abnormalities that threatened the babies' lives.

All three operations involve draining off fluid that was collecting in the baby and threatening to cause either premature labor or damage to the baby's vital organs.

The fetal surgery was performed by Dr. John W. Seeds, assistant professor of obstetrics and gynecology and radiology at the School of Medicine, and other members of the ob-gyn department.

Seeds explained that this type of fetal surgery has been a realistic treatment option for only the last year and a half and is only used to correct certain problems under specific conditions.

"This is not cutting and sewing and repairing surgery," he said. "Almost 100 percent of the time it involves drainage of abnormal fluid collecting somewhere in the fetus."

Seeds said in many cases where abnormal fluid collects in the baby, fetal drainage is not necessary and it is possible to begin treatment after the baby is born. Fluid can collect in any one of a number of open spaces in the fetus, he said, including the kidney, bowel, bladder, lung, brain or abdominal cavity.

"Abnormal fluid collection is not in itself an indication for drainage," Seeds continued. "We consider fetal surgery if the fluid collection is leading to an abnormal increase in uterine size that would bring on premature labor or if the mass of fluid appears to be damaging any organs of the fetus such as the lungs or kidneys."

Operations performed so far at North Carolina Memorial have involved draining off fluid from the kidney, brain and abdominal cavity.

Seeds stressed that the decision to offer fetal surgery and the surgery itself involves a team of health professionals including neonatal intensive care specialists, perinatal obstetricians, ultrasonographers, neurosurgeons and urologists.

"This is not a procedure that anyone could guarantee will benefit the fetus," Seeds said, "and the parents must be critically aware of the risks and the unproven nature of the procedure before they make a decision to go ahead with the surgery. It is, however, offered as an option in the car of an abnormal child."

Direct fetal damage, premature labor, infection and rup tured membranes are all possible complications of th surgery, Seeds said.

North Carolina Names in the News

Dr. Lyndon K. Jordan, a Smithfield family physician has been named North Carolina's Family Physician of th Year by the North Carolina Academy of Family Physicians. The award is presented each year to a family physician whose professional and civic activities most exemplify

a spirit of selfless service to his or her patients and community. Dr. Jordan is a 1961 graduate of Duke University Medical School. He has practiced family medicine in Smithfield for 18 years.

"The Neurobiology Letter" is a new source of material of interest to doctors and patients which appears monthly. It is published by the Cape Fear Press, 1212 Walter Reed Road, Fayetteville, NC. The editor is **Assad Meymandi, M.D.,** Psychiatrist and Medical Director of Cape Fear Neuropsychiatric Associates, P.A. The annual subscription cost is $12.00. The topics discussed in volume 1, number 2 include agoraphobia, panic attack, the differential diagnosis of anxiety, hyperventilation, and other psychiatric diseases associated with anxiety.

The newly elected officers of the North Carolina Chapter of the American College of Radiology are: **James H. Owsley,** Hickory, president; **William G. Elmore,** Roanoke, president-elect; **Larry M. Crane,** Durham, vice president; **George Rosser,** Concord, secretary-treasurer; **Robert L. Green,** Winston-Salem, Councilor; **Edward V. Staab,** Chapel Hill, Councilor; **Robert S. Lackey,** Charlotte, Councilor; **Joe Lee Frank, Jr.,** Ahoskie, alternate Councilor; **Irwin S. Johnsrude,** Greenville, alternate Councilor; **John H. Williams,** Hendersonville, alternate Councilor.

On February 4, the North Carolina Medical Society honored its legal counsel of almost 50 years, **John H. Anderson, Jr.** During a brief ceremony held during the Society's Midwinter Conference, Medical Society President Marshall S. Redding referred to Mr. Anderson as "unquestionably the foremost authority on health law that North Carolina has ever produced."

Mr. Anderson is the senior partner of the law firm of Smith, Anderson, Blount, Dorsett, Mitchell & Jernigan, the general counsel for the North Carolina Medical Society. He was born on December 28, 1907, son of John Huske Anderson and Lucy Worth London Anderson in Fayetteville, North Carolina. He graduated from Fayetteville High School in June 1925 and received his B.A. degree from the University of North Carolina in 1930. He was Co-Editor-in-Chief of *The North Carolina Law Review* while at the University of North Carolina Law School and received a degree of LL.B. with Honors in 1930. He was awarded the Sterling Fellowship for graduate study at Yale University School of Law which he declined in order to become an associate in the law firm then named Smith & Joyner. He achieved the rank of Lieutenant Commander in the United States Navy during World War II and received a special commendation for meritorious service.

Mr. Anderson began to represent the North Carolina Medical Society in 1937 and became counsel to the North Carolina Board of Medical Examiners in 1946. In June of 1979 he was recognized by the Board for his "distinguished and enlightened counsel." He became counsel to the North Carolina Medical Peer Review Foundation in 1974 and to The North Carolina Medical Mutual Insurance Company of North Carolina when it was formed in 1977; in April 1979 he was recognized by that company's board of directors "for his sage counsel and perseverance as well as his great personal contributions which led to the formation and continued success of this company."

Mr. Anderson is a distinguished member of the bar, having served as President of the Wake County Bar Association in 1958, as President of the Tenth Judicial District Bar Association in 1955 and as member of the Executive Committee of the North Carolina Bar Association from 1938 through 1941.

The certificate presented by the Medical Society to Mr. Anderson at the February 4 ceremony declared that Mr. Anderson "has served this organization well, faithfully and with great credit for almost half a century."

About the Cover

Our cover cartoon was drawn by Ernest Craige, M.D., Henry A. Foscue Distinguished Professor of Cardiology at The University of North Carolina in Chapel Hill. It illustrates one anecdote in Dr. Shirley Osterhout's article on Poison Control Centers in North Carolina. Dr. Craige has agreed to provide cartoons to accompany the lead article in each month's Features for Patients section during 1983. One cartoon each month will appear on the cover. We are grateful to Dr. Craige for sharing his creative energy and artistic expertise with readers of the *North Carolina Medical Journal.*

In the Next Issue

Toxic Encounters: Emetics

NMR Imaging — Current State

Learning Without Work: Giardiasis

Diagnosis and Treatment of Cushing's Disease at Duke University, 1977-1982

Feature for Patients: Health Insurance Benefit Programs

Scholarly Publishing in North Carolina

David C. Matthews, M.D., has recently joined the Charlotte Plastic Surgical Center, P.A. After spending postgraduate time at the Mayo Clinic and in Melbourne, Australia developing microvascular and craniofacial techniques, Dr. Matthews' professional interest is in microvascular and craniofacial surgery.

In Memoriam

Edwin J. Chapman, M.D.

Dr. Edwin J. Chapman, highly respected otorhinolaryngologist of Asheville, NC, died January 10, 1983 at age 82. A native of Wisconsin, Dr. Chapman obtained his A.B. degree from the University of Wisconsin and his M.D. degree from Northwestern in 1927. After an internship at Harper Hospital in Detroit, he engaged in general practice in Michigan for ten years before specializing in otorhinolaryngology at the Graduate Medical School of the University of Pennsylvania under Dr. Chevalier Jackson. He was certified by the American Board of Otolaryngology in 1940.

Dr. Chapman came to Asheville in 1939. From the beginning, he was recognized for his skill as an ear, nose and throat surgeon and bronchoscopist. He was consultant at the Black Mountain Sanitorium for over thirty years and Senior Consultant in bronchoscopy at the Oteen Veteran's Administration Hospital from 1946 until 1982. He was a member of numerous medical and specialty societies, including serving as President of the Buncombe County Medical Society in 1951. He was also active in community affairs, interested in hunting and fishing, and he was an expert amateur photographer.

He continued to be active in his specialty, serving as consultant at Oteen VA Hospital on a regular basis until one year before his death.

He is survived by Mrs. Lucille Au Werter Chapman of Asheville.

BUNCOMBE COUNTY MEDICAL SOCIETY

David Reid Murchison, M.D.

Dr. David Murchison, the oldest member of this Society, died at his home on January 9, 1983, in his ninety-first year. He was born in Wilmington, and lived almost his entire life within one block of his birthplace. He graduated from the University of North Carolina in 1912, and received his medical degree from Johns Hopkins Medical School in 1916, and began intern training in the Henry Ford Hospital in Detroit.

Dr. Murchison joined the Ambulance Corps of the International Red Cross and served in Brest, France until the end of World War I. He returned to Wilmington in 1922, where he spent the remainder of his life. His practice was devoted to internal medicine, particularly diseases of the heart and diabetes. He studied electrocardiography under Dr. Louis Katz of Chicago and Dr. Paul White of Boston, and diabetes with the Joslin group in Boston.

Dr. Murchison retired at the age of 78, and remained very active for many years afterwards. He particularly enjoyed hunting and fishing, which he did at every opportunity. At age 85 he still outwalked his much younger companions and bagged his full quota of quail.

Ruth Mary Collings, M.D.

Ruth Mary Collings, M.D., of 203 South Tremont Drive, Greensboro, North Carolina, died on December 19, 1982 at the age of 84 years. A native of Orange County, California, Dr. Collings was born on April 29, 1898, and graduated Phi Beta Kappa from Pomona College, and then graduated from the University of Pennsylvania Medical School with Honors in 1924, being the only woman in her class.

Dr. Collings came to the Woman's College of the University of North Carolina in 1925. She served the College well and retired as Director of the Department of Health and as a teacher of distinction in 1963.

Dr. Collings was Vice President of the American Student Health Association, President of the North Carolina Mental Health Society, and a founding member and later president of the local mental health chapter. She was a board member of the North Carolina Children's Home Society.

After confinement to a wheel chair, Dr. Collings continued to attend lectures, concerts, theaters and book clubs, and she did extensive reading. Until recent years she enjoyed traveling. She was a woman of high intelligence and had a wide range of interests.

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NORTH CAROLINA MEDICAL SOCIETY MEETINGS

PLAN AHEAD

ANNUAL MEETING
May 5-8, 1983
Pinehurst Hotel
Pinehurst, N.C.

SPORTS SYMPOSIUM
July 1-3, 1983
Blockade Runner
Wrightsville Beach, N.C.

Classified Ads

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North Carolina MEDICAL JOURNAL

for doctors and their patients

Official Journal of the NORTH CAROLINA MEDICAL SOCIETY

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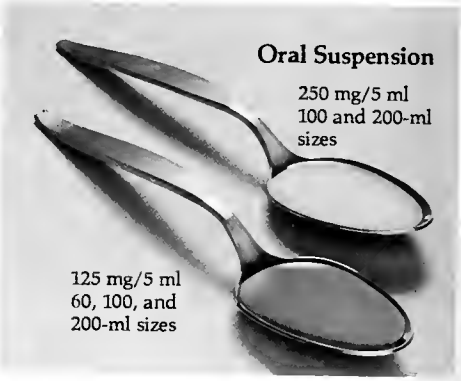

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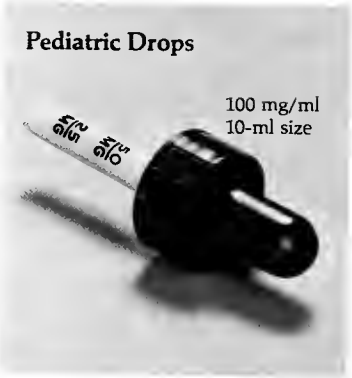

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North Carolina
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for doctors and their patients

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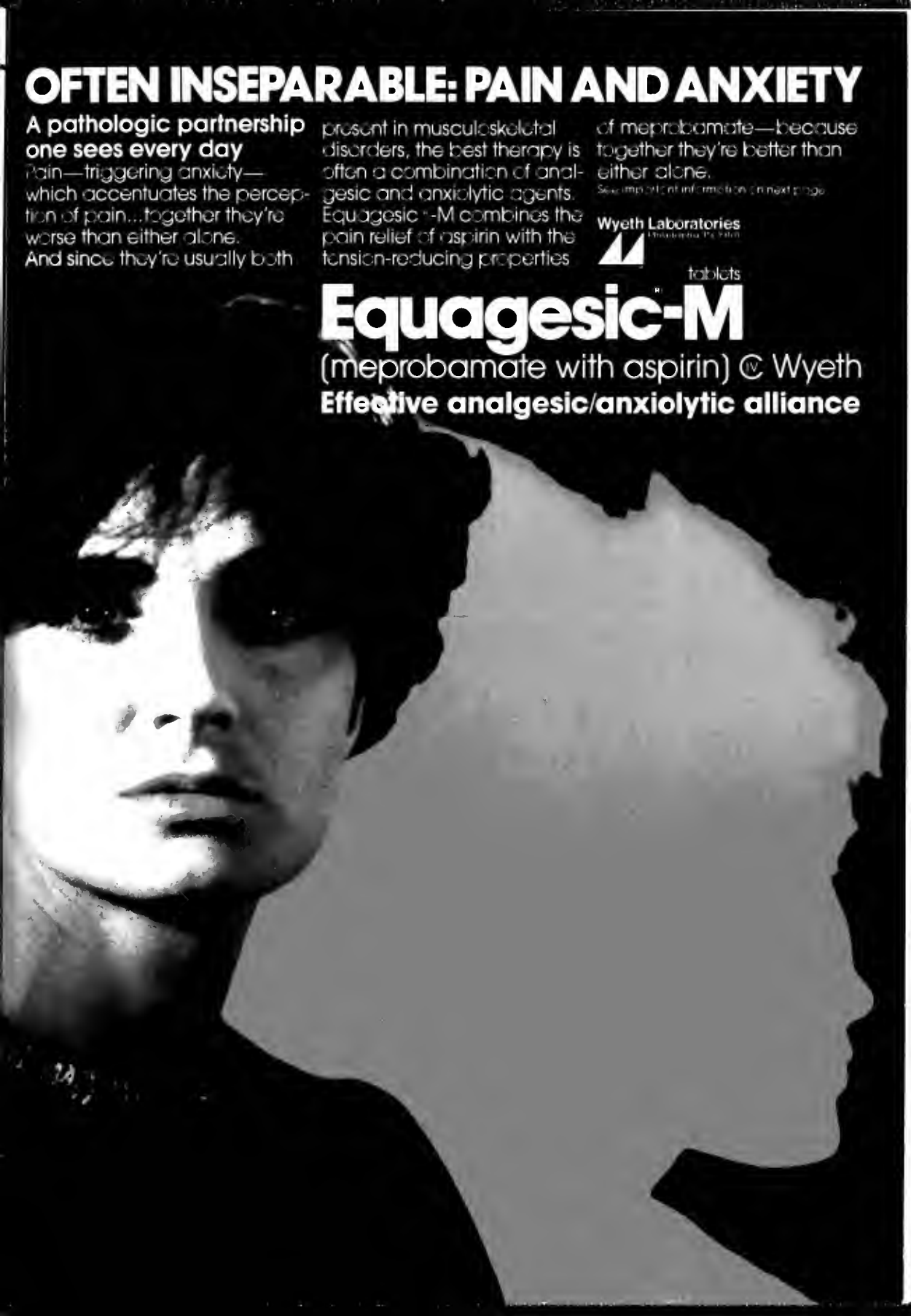

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DESCRIPTION Each tablet contains 200 mg meprobamate and 325 mg aspirin.

INDICATIONS Adjunct in short-term treatment of pain accompanied by tension and or anxiety in patients with musculoskeletal disease. Clinical trials demonstrated in these situations relief of pain is somewhat greater than with aspirin alone. Effectiveness in long term use over 4 months has not been assessed by systematic clinical studies. Physicians should periodically reassess usefulness of drug for individual patients.

CONTRAINDICATIONS ASPIRIN: Allergic or idiosyncratic reactions to aspirin or related compounds. MEPROBAMATE: Acute intermittent porphyria; allergic or idiosyncratic reactions to meprobamate or related compounds (e.g. carisoprodol, mebutamate, dicarbamol).

WARNINGS ASPIRIN: Use salicylates with extreme caution in patients with peptic ulcer, asthma, coagulation abnormalities, hypoprothrombinemia, vitamin K deficiency, or those on anticoagulants. In rare instances, aspirin in persons allergic to salicylates may result in life threatening allergic episodes.

MEPROBAMATE: DRUG DEPENDENCE: Physical and psychological dependence and abuse have occurred.

Chronic intoxication from prolonged ingestion of usually greater than recommended doses is manifested by ataxia, slurred speech and vertigo. Therefore carefully supervise dose and amounts prescribed and avoid prolonged use, especially in alcoholics and others with known properties for taking excessive quantities of drugs. Sudden withdrawal after prolonged and excessive use may precipitate recurrence of pre-existing symptoms (e.g. anxiety, anorexia, or insomnia) or withdrawal reactions (e.g. vomiting, ataxia, tremors, muscle twitching, confusional states, hallucinosis, and rarely, convulsive seizures. Such seizures are more likely in persons with CNS damage or pre-existent or latent convulsive disorders. Onset of withdrawal symptoms occurs usually within 12 to 48 hours after discontinuation; symptoms usually cease within next 72-to-48-hour period. After excessive dosage has continued for weeks or months, reduce dosage gradually over 1 to 2 weeks rather than stop abruptly. Alternatively, a short-acting barbiturate may be substituted then gradually withdrawn.

POTENTIAL HAZARDOUS TASKS: Warn patients meprobamate may impair mental or physical abilities required for potentially hazardous tasks (e.g. driving or operating machinery).

ADDITIVE EFFECTS: Since CNS suppressant effects of meprobamate and alcohol or meprobamate and other psychotropic drugs may be additive exercise caution with patients taking more than one of these agents simultaneously.

USAGE IN PREGNANCY AND LACTATION An increased risk of congenital malformations associated with minor tranquilizers (meprobamate, chlordiazepoxide and diazepam) during first trimester of pregnancy has been suggested in several studies. Because use of these drugs is rarely a matter of urgency their use during this period should almost always be avoided. The possibility that a woman of childbearing potential may be pregnant at time of institution of therapy should be considered. Advise patients if they become pregnant during therapy or intend to become pregnant to communicate with their physicians about desirability of discontinuing the drug.

Meprobamate posses the placental barrier. It is present both in umbilical-cord blood at or near maternal plasma levels and in breast milk of lactating mothers at concentrations two to four times that of maternal plasma. When use of meprobamate is contemplated in breastfeeding patients, consider the drug's higher concentrations in breast milk as compared to maternal plasma levels.

USAGE IN CHILDREN: Keep preparations out of reach of children. Equagesic-M is not recommended for patients 12 years of age and under.

PRECAUTIONS ASPIRIN: Salicylates can aggravate uricosuric activity of probenecid and sulfinpyrazone. Salicylates are reported to enhance hypoglycemic effect of sulfonylurea antidiabetics.

MEPROBAMATE: Use lowest effective dose, particularly in elderly and debilitated patients, to preclude oversedation. Meprobamate is metabolized in the liver and excreted by the kidneys; to avoid excess accumulation exercise caution in use in patients with compromised liver or kidney function. Meprobamate occasionally may precipitate seizures in epileptic patients; it should be prescribed cautiously and in small quantities to patients with suicidal tendencies.

ADVERSE REACTIONS ASPIRIN: May cause epigastric discomfort, nausea and vomiting. Hypersensitivity reactions including urticaria, angioneurotic edema, purpura, asthma, and anaphylaxis may rarely occur. Patients receiving large doses of salicylates may develop tinnitus.

MEPROBAMATE: CNS: Drowsiness, ataxia, dizziness, slurred speech, headache, vertigo, weakness, paresthesias, impairment of visual accommodation, euphoria, overstimulation, paradoxical excitement, fast EEG activity.

GI: Nausea, vomiting, diarrhea.

CARDIOVASCULAR: Palpitation, tachycardia, various forms of arrhythmia, hypotensive crisis.

ALLERGIC OR IDIOSYNCRATIC: Allergic reactions are characterized by itching, urticaria, or erythematous maculopapular rash, generalized or confined to the groin. Other reactions include leukopenia, acute nonthrombocytopenic purpura, petechiae, ecchymoses, eosinophilia, peripheral edema, adenopathy, fever, fixed drug eruption with cross reaction to carisoprodol and cross sensitivity between meprobamate mebutamate and meprobamate carbamate. Rare more severe hypersensitivity reactions include hyperpyrexia, chills, angioneurotic edema, bronchospasm, oliguria, and anuria. Also, anaphylaxis, exfoliative dermatitis, stomatitis, and proctitis. Stevens-Johnson syndrome and toxic epidermal necrolysis have occurred.

HEMATOLOGIC (SEE ALSO "ALLERGIC OR IDIOSYNCRATIC"): Agranulocytosis, aplastic anemia have been reported, although no causal relationship has been established, and thrombocytopenic purpura.

OTHER: Exacerbation of porphyric symptoms.

DOSAGE AND ADMINISTRATION Usual dose is one or two tablets 3 to 4 times daily as needed for relief of pain when tension or anxiety is present. Not recommended for patients 12 years of age and under.

OVERDOSAGE Treatment is essentially symptomatic and supportive. Any drug remaining in the stomach should be removed. Induction of vomiting or gastric lavage may be indicated. Activated charcoal may reduce absorption of both aspirin and meprobamate. Aspirin overdosage produces usual symptoms and signs of salicylate intoxication. Observation and treatment should include management of hyperthermia, specific parenteral electrolyte therapy for ketalosis and dehydration, watching for evidence of hemorrhagic manifestations due to hypoprothrombinemia which, if it occurs, usually requires whole-blood transfusions. Suicidal attempts with meprobamate have resulted in drowsiness, lethargy, stupor, ataxia, coma, shock, vasomotor and respiratory collapse. Some suicidal attempts have been fatal. The following data, reported in the literature and from other sources, are not expected to correlate with each case, considering factors such as individual susceptibility and length of time from ingestion to treatment, but represent usual ranges reported. Acute simple overdose (meprobamate alone): Death has been reported with ingestion of as little as 12 grams meprobamate and survival with as much as 40 grams.

BLOOD LEVELS 0.5 ± 0 mg percent represents usual blood level range after therapeutic doses. The level may occasionally be as high as 3.0 mg percent.

3-10 mg percent usually corresponds to findings of mild-to-moderate symptoms of overdosage such as stupor or light coma.

10-20 mg percent usually corresponds to deeper coma requiring more intensive treatment. Some fatalities occur.

At levels greater than 20 mg percent more fatalities than survivals can be expected.

Acute combined overdose (meprobamate with other psychotropic drugs or alcohol). Since effects can be additive, history of ingestion of a low dose of meprobamate plus any of these compounds or of a relatively low blood or tissue level, cannot be used as a prognostic indicator.

In cases of excessive doses, sleep ensues rapidly and blood pressure, pulse, and respiratory rates are reduced to basal levels. Any drug remaining in stomach should be removed and symptomatic treatment given. Should respiration or blood pressure become compromised, respiratory assistance, CNS stimulants and pressor agents should be administered cautiously as indicated. Diuresis, osmatic (mannitol) diuresis, peritoneal dialysis and hemodialysis have been used successfully in removing both aspirin and meprobamate. Alkalinization of the urine increases excretion of salicylates. Careful monitoring of urinary output is necessary and caution should be taken to avoid overhydration.

Relapse and death after initial recovery have been attributed to incomplete gastric emptying and delayed absorption.

HOW SUPPLIED Bottles of 50 scored tablets.

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An Institute of Medicine for North Carolina

North Carolina is fortunate in having a pluralistic health care system of great strength. Included are four outstanding university medical centers, good community hospitals and related facilities dispersed throughout the state, an adequate number of physicians and allied health care personnel, a unique statewide system of Area Health Education Centers, and a strong state and county public health system.

We have also been fortunate in having health-oriented state governmental leaders who have sought the advice and cooperative efforts of our health professionals. Together, much has been accomplished. North Carolina has frequently been in the forefront of new and innovative changes in health care.

Now, to better coordinate and extend our efforts to assure improved care for all North Carolinians, a North Carolina Institute of Medicine is proposed. Such an institution now exists in no state.

This proposal comes from the North Carolina Joint Conference Committee on Medical Care, Incorporated — an advisory body whose membership includes representatives from our medical societies, university medical centers, hospital association, state governmental medical officials, public health officials, and those involved with health insurance and health-related foundations.

The Joint Conference Committee has asked that the Governor request and the General Assembly establish such an independent corporation. It is envisioned that this Institute would have as members up to a hundred distinguished and influential North Carolinians. Represented would be leaders from medicine and other health professions, hospitals, health insurance companies, state and county government and other political units, education, business and industry, agriculture, the universities, and the university medical centers. An executive committee of this body would be empowered to draw up by-laws, procure facilities, receive funds, employ a director and staff, and begin operation of the Institute.

As to funding, the Joint Conference Committee feels that there should be a balance of both public and private monies involved, heavily weighted toward the private sector. The General Assembly is being requested to appropriate a relatively small amount of state funds, and private foundations will be challenged to grant funds, possibly up to eight or ten times that appropriated by the state.

It is felt advisable that the Institute not be located on a university campus, but be situated in the central portion of the state, possibly in the Research Triangle area.

The function of such an institute would be to monitor health care in this state and to respond, through its extensive affiliations, to identified needs. It is also envisioned that specific health related projects and inquiries from private industry, foundations, academic institutions, and governmental agencies would be received, on a contractual basis, and responded to. By linking the Institute to each university medical center and to the nine Area Health Education Centers, the pooled faculty and other resources will far exceed any other capability in the state, and will permit almost unlimited investigative and educational opportunities.

To date, the Joint Conference Committee has had a very warm reception and encouragement in discussing this matter with the Governor, the Lieutenant Governor, and many legislative leaders. The establishment of this Institute by the current session of the General Assembly is judged to be a good possibility. Simultaneously, preliminary discussions with health-related foundations, both in North Carolina and on the national scene, have encouraged those working directly with this project to proceed with optimism.

Such an Institute, properly founded and operated on the highest-quality-possible basis and properly funded from both public and private sources could provide invaluable service to our entire state. It might also serve as the model for other, similar institutions in other states and regions.

James E. Davis, M.D.

From 2609 North Duke Street, Durham, NC 27704.

AIDS and the Moral Law

In our contemporary state of moral and ethical anarchy, the concept of a natural and universal moral law is derided and dismissed by modern sceptics. From the sixties onward, situation ethics and the like have eroded most moral systems. The moral philosopher and the ordinary citizen are alike adrift in an uncharted sea of moral and ethical uncertainties. It could be argued that this drift will continue until it is possible to rehabilitate, in some degree, an understanding of a universal, natural moral law.

Most primitive societies appear to adhere to a natural moral law through the imposition of a system of taboos, often with a religious dimension. It could be that many of these taboos originated in attempts to cope with dimly understood hygienic and sanitary problems. For instance, the deeply religious significance of the Israelite/Jewish feast of Unleaven Bread may well have originated in the

From The Rectory, 127 North Main Street, Warrenton, NC 27589.

need to guard the community against the use of old and infected leaven. The consequences of a tribal experience of disease caused by such an infection could bite deeply into the tribal memory. Life and religion were inextricably mixed, and the prohibition would have remedial and religious implications. The remedial aspect might well, over the course of centuries, be forgotten, but the religious significance would grow and fill the gap caused by the disappearance of the remedial aspects, with additional theological dimensions.

Most primitive societies have taboos against such behavior as murder, incest, homosexual practices, and sexual promiscuity. It is not difficult to account for the taboos against murder, stealing and adultery in a tribal context, but other sexual taboos may need deeper investigation. Such an investigation might conceivably show that practices which have subsequently been considered morally wrong were also physically highly dangerous. In other words there may, after all, be a "natural law" which links morality and health in human society.

Homosexual behavior has, perhaps, existed since the dawn of civilization. However, apart from artificially imposed homosexual celibate communities (e.g., armies and prisons), homosexual practices have developed more frequently in highly sophisticated (some would say, decadent) societies than elsewhere, and for long periods in many civilizations these practices have made only occasional and aberrant appearances. In such a society as ancient Judah, this is perhaps not surprising, for the punishment for homosexual indulgence was drastic and final. Leviticus 20:13 commands the death penalty.

This sentence may seem excessively drastic for an act which twentieth century society often considers legitimate behavior between consenting adults. If, however, a dimly remembered tribal experience had seared into the racial subconscious the memory that homosexual practices imperilled not only those who were personally involved, but the tribe itself also, such punishment would seem entirely justified.

Acquired Immune Deficiency Syndrome (AIDS) has made a recent and frightening appearance on the American health scene. It appears to have originated among practicing homosexuals. Now, to the present generation and to modern medicine this is a new and startling phenomenon, but it cannot be said with any certainty that it has never before appeared in human history. Evidence for such an occurrence will not be easy to find but, strangely enough, there could be a clue in the writings of St. Paul.

In the first chapter of the Epistle to the Romans, Paul inveighs against those whom, he says, have exchanged natural relations for unnatural; in other words, those who indulge in homosexual practices. In castigating these people, however, Paul makes a curious, and what must have seemed to many generations of readers an obscure, remark. He says, "men committing shameless acts with men and *receiving in their own persons the due penalty* for their error." That this statement has been an enigma, not only to the ordinary reader, but to learned commentators also, can be seen from the following fact. When three major commentaries on the Epistle to the Romans are examined (one from the sixteenth century by Martin Luther, one from the late nineteenth century by Sanday and Headlam, and one from the mid-twentieth century by C. H. Dodd), it will be found that none of these very great scholars makes any comment upon this verse. While other verses are examined in great detail, this statement appears to be entirely ignored. The reason for such an omission could be that the commentators just did not know what Paul was talking about. And why? Because the Christian prohibition against homosexual practices had resulted, over the centuries, in the natural eradication of the disease.

Similarly, the Levitical law would quickly result in the same natural eradication. Repeatedly in the Levitical and Deuteronomic moral and ritual codes (many ritual laws seem to have hygienic origins) the offender, if not executed, is excluded from the community, "cut off" from the tribe as a punishment for the offense. This may also have been a system for protecting the health of the community. The Levitical and Deuteronomic treatment of the leper no doubt appalls us, but it was the community's only way, in their state of medical development, to safeguard the health of the community as a whole. Leprosy could not be eradicated by these methods, but it could be controlled. This control was essential because the contagiousness of the disease made it a constant threat to the whole tribe. Other, sexually induced diseases, however, submitted more easily to tribal discipline, even if the treatment was more drastic even than that for leprosy.

The introduction of the religious sanction would give greater force to the power of tribal discipline. Divine punishment by sickness is a widespread belief among primitive communities, and this belief is not restricted to such communities. In the Old Testament (and in certain parts of the New) it was held that God did punish by pestilence (e.g., 2 Samuel 24:15), but He could also punish by more dramatic and immediate means. A particularly forceful example of this can be seen in the destruction of Korah, Dathan and Abiram and their families in Numbers 16:31ff.

It may be that these stories, and many of the taboos, have etiological origins. More important, however, it may yet be discovered that a universal natural moral law is a prerequisite for human health, both physical and spiritual. It would be quite in keeping with the Biblical principle of Divine revelation for God to reveal both his will and his law by such means as these.

The Reverend G. R. Selby

Beer

According to the *American Medical News*, the American Lung Association, with some pride, has designated 38 worthy magazines, publications which have refused to accept cigarette advertising, as recipients of its Media Awards. As expected, the *Reader's Digest*, *Boy's Life* and the *National Geographic* were recognized, but so also were *The New Yorker*, *Natural History* and the quasi-gov-

From the Department of Medicine, Bowman Gray School of Medicine, Wake Forest University, Winston-Salem, NC 27103.

ernmental *Smithsonian*. Why point out or contrast these particular honorees? The first three do not accept advertisements extolling the social fitness of hard liquors and wine, while the others do. A recent personal survey of two issues of the latter trio, taken at random from the magazine rack, showed the *Smithsonian* leading with 12 pages per issue, trailed by *The New Yorker* with six and *Natural History* with two.

Earlier efforts of the anti-tobacco lobbies vanquished cigarette advertising from television, which does not hesitate to accept, and may actually depend on, beer advertising. After all, so much is at stake over a Michelob Light that the audience deserves to know the outcome. But we never really learn the consequences of a Stroh Light night or whether those fat ex-jocks who drink Lite Beer from Miller's are ever aroused from their sloth.

A partial answer can be given about the acute metabolic consequences of moderate drinking, not of Stroh's to be sure, but of McEwan's Export,[1] not available in the east, south of Baltimore, and reputedly the finest of all such imports. (Newcastle Brown Ale, brewed like McEwan's in Newcastle upon Tyne in England, is available but shouldn't be south of Baltimore.) At any rate, six healthy males, aged 21 to 32 years, mean 25, were importuned to participate in an acute experiment which required the consumption of a pint and a half of McEwan's hourly from 8 to 11 p.m. Resistance overcome, the experimental subjects, each acting as his own control, submitted to urine collections and venipunctures and to the risk of matinal symptoms.

Although serum osmolality rose, as expected,[2] in parallel with blood alcohol concentration, free water clearance (osmotically unobligated urine) rose, serum arginine vasopressin concentration fell during the acute phase, and the body restored its balance quickly.[1] No morning-after hypoglycemia, not uncommon after drinking the hard stuff, was detected but the young men did complain of mild headache, nausea, dry mouth, and malaise on awakening.[1] We can then assume logically that Stroh Light nights, when limited to a six pack and not back to back, are only mildly distressing. The effects of drinking more and drinking regularly remain to be assessed.

These observations are really of more than medical interest because up to one-third of automobile fatalities and a comparable proportion of boating deaths are related to alcohol consumption, and because the costs of alcohol abuse in the United States in 1976 exceeded $44 billion.[3] Almost certainly imbibition is increasing out of proportion to the rise in the Consumer Price Index and cirrhosis of the liver is second only to carcinoma of the lung as the most rapidly increasing cause of death in the United States.[3] Between 1950 and 1976, per capita absolute alcohol consumption in this country rose by 62%, from 5 to 8 liters, and the ceiling is nowhere in sight.

Driving under the influence (DUI) has lately gained the attention of our lawmakers in Raleigh, partly because allegedly drunken adolescents, being sold beer illegally, have killed themselves and others as they have raced about, particularly at night. The *Wall Street Journal* has sharpened the focus on the problem of drinking on campus,[4] where competition for a Michelob Light seems more uninhibited than elsewhere.

Why are we having such difficulties today? After all, beer has been around for at least 8,000 years and alcoholic beverages have been used in sacrificial and other religious rites ever since. Rameses II in Egypt in 1200 BC is reputed to have consecrated more than 450,000 jugs of beer to the deities of the day, and monks in medieval monasteries were limited to a gallon a day. Even some Puritans drank beer. The first license to brew in what is now the United States was issued by the Massachusetts Bay Colony in 1637, 17 years after Plymouth Rock, and three years earlier the price of a quart of beer had been fixed there at no more than a penny. George Washington had a small brewery at Mount Vernon and at Monticello Jefferson's recommendation of beer as better suited than spirits for the American yeoman is conspicuously posted.

In earlier times, now considered as tradition-directed, social control must have been more effective. Agrarian societies living in scarcity on the verge of biologic necessity, did not have the time, the money or the available product, the use of which had been circumscribed anyway by the dictates of season and worship. Most families in fact brewed their own, price controls were unheard of and advertising had to await surpluses for the induction of dissatisfaction. Now a maximum of opportunity, leisure and temptation in the absence of adequate social controls aggravates thirst, described by the expert in behavior as the appetitive control system. Even so this constellation of events, fostered in our colleges and high schools, would not be so devastating were it not for the addition of gasoline to the equation.

If one of government's prescribed roles is the protection and maintenance of the general welfare, what is to be done? Certainly the assurances of Ann Landers that professional help, sought and obtained, is good for all problems are of no more effect than sermons and essays viewing with alarm and government directives and imperatives about changing life-styles. Still we should remember that alcohol is the most damaging of our recreational drugs, that the readers of, and perhaps even contributors to, *The New Yorker*, the *Smithsonian* and *Natural History* are not immune to the effects of alcohol taken acutely, chronically or on the sly.

John H. Felts, M.D.

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The Need for Social Preventive Medicine

In the March 11, 1983 issue of the *Morbidity and Mortality Weekly Report* published by the Centers for Disease Control, there is an interesting comparison of the estimated mortality from various causes and the years of potential life lost before age 65 from these same causes. The earlier a person dies, the more years of potential life are lost. Accidents, which result in 8,380 deaths per year, cause the disease in third place, and suicide and homicide in fourth place. The largest number of physician contacts — greatest loss of years of life. Malignant neoplasm, producing 37,080 deaths, is a poor second, followed by heart 5,153,000 — come from heart disease, with accidents close behind with 4,346,000 encounters.

The first and fourth causes of loss of years of life relate to our life style. Social preventive medicine offers at present more opportunities for saving useful years of life than any other area.

	Rank Order Of	
	Years of Potential Life Lost Before Age 65	*Estimated Mortality*
Accidents	1	4
Malignant neoplasms	2	2
Diseases of heart	3	1
Suicides and homicides	4	6
Cerebrovascular diseases	5	3
Chronic liver disease and cirrhosis	6	9
Pneumonia and influenza	7	7
Chronic pulmonary diseases	8	5
Diabetes mellitus	9	8

Eugene A. Stead, Jr., M.D.

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About the Cover

This issue's cover cartoon, again drawn by Dr. Ernest Craige of the University of North Carolina in Chapel Hill, illustrates the reaction of one distressed patient upon receipt of his hospital and/or medical bill. The article by James A. Brady, Jr., Understanding Your Health Insurance Benefits, explains away the confusion faced by patients who are covered by health insurance when they receive a statement. We recommend it to doctors and their patients.

Anxious patients improve in just a few days

And what is more reassuring to an excessively anxious patient than medication that promptly starts to relieve his discomforting symptoms? Valium® (diazepam/Roche) begins working within 30 to 90 minutes. Patients continue to improve in just a few days, and relief continues throughout the course of treatment.

There are other important benefits with Valium as well—along with its broad clinical range, Valium has an efficacy/safety profile that few, if any, drugs can match. This record has been achieved with extensive clinical experience, undoubtedly including yours. And, as you must have observed, side effects more serious than drowsiness, fatigue or ataxia rarely occur. Nevertheless, as with any CNS-acting agent, patients should be cautioned about driving, operating hazardous machinery or ingesting alcohol or other CNS-depressant drugs while taking Valium.

Yet another benefit Valium affords is flexibility. Available in 2-mg, 5-mg and 10-mg scored tablets, Valium enables you to titrate dosage to individual patient needs. For the geriatric patient, a starting dosage of 2 to 2½ mg once or twice a day is recommended. And, for patients who forget or skip medication, you can prescribe Valrelease™ (diazepam/Roche) 15-mg slow-release capsules, knowing that Valrelease will assure all the benefits of Valium 5 mg *t.i.d.* with the convenience of once-a-day dosage.

Discontinuation of Valium (or Valrelease) is typically as smooth as its start in short-term therapy. However, Valium and Valrelease should be discontinued gradually after more extended treatment. As you diminish dosage, the built-in tapering action of Valium and Valrelease will help avoid rapidly recurring anxiety symptoms and symptoms of withdrawal, and will help ease the patient's transition to independent coping when therapeutic goals have been achieved.

...that's one of the unique benefits of

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For a summary of product information, please turn the page.

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Valium® (diazepam/Roche) Ⓝ Tablets
Valrelease™ (diazepam/Roche) Ⓝ slow-release Capsules
Injectable Valium® (diazepam/Roche) Ⓝ

Before prescribing, please consult complete product information, a summary of which follows:

Indications: Management of anxiety disorders, or short-term relief of symptoms of anxiety. Anxiety or tension associated with the stress of everyday life usually does not require treatment with an anxiolytic. Symptomatic relief of acute agitation, tremor, impending or acute delirium tremens and hallucinosis due to acute alcohol withdrawal, adjunctively in: relief of skeletal muscle spasm due to reflex spasm to local pathology; spasticity caused by upper motor neuron disorders, athetosis, stiff-man syndrome. *Oral forms* may be used adjunctively in convulsive disorders, but not as sole therapy. *Injectable form* may also be used adjunctively in: status epilepticus, severe recurrent seizures; tetanus; anxiety, tension or acute stress reactions prior to endoscopic surgical procedures; cardioversion.

The effectiveness of diazepam in long-term use, that is, more than 4 months, has not been assessed by systematic clinical studies. The physician should periodically reassess the usefulness of the drug for the individual patient.

Contraindications: Tablets or capsules in children under 6 months of age; known hypersensitivity; acute narrow angle glaucoma; may be used in patients with open angle glaucoma who are receiving appropriate therapy.

Warnings: As with most CNS-acting drugs, caution against hazardous occupations requiring complete mental alertness (*e.g.*, operating machinery, driving). Withdrawal symptoms similar to those with barbiturates and alcohol have been observed with abrupt discontinuation, usually limited to extended use and excessive doses. Infrequently, milder withdrawal symptoms have been reported following abrupt discontinuation of benzodiazepines after continuous use, generally at higher therapeutic levels, for at least several months. After extended therapy, gradually taper dosage. Keep addiction-prone individuals (drug addicts or alcoholics) under careful surveillance because of predisposition to habituation/dependence.

> ***Usage in Pregnancy***: **Use of minor tranquilizers during first trimester should almost always be avoided because their use is rarely a matter of urgency and because of increased risk of congenital malformations, as suggested in several studies. Consider possibility of pregnancy when instituting therapy; advise patients to discuss therapy if they intend to or do become pregnant.**

ORAL: Advise patients against simultaneous ingestion of alcohol and other CNS depressants.

Not of value in treatment of psychotic patients; should not be employed in lieu of appropriate treatment. When using oral forms adjunctively in convulsive disorders, possibility of increase in frequency and/or severity of grand mal seizures may require increase in dosage of standard anticonvulsant medication; abrupt withdrawal in such cases may be associated with temporary increase in frequency and/or severity of seizures.

INJECTABLE: *To reduce the possibility of venous thrombosis, phlebitis, local irritation, swelling and, rarely, vascular impairment when used IV: inject slowly, taking at least one minute for each 5 mg (1 ml) given; do not use small veins, i.e., dorsum of hand or wrist; use extreme care to avoid intra-arterial administration or extravasation. Do not mix or dilute with other solutions or drugs in syringe or infusion flask. If it is not feasible to administer Injectable Valium directly IV, it may be injected slowly through the infusion tubing as close as possible to the vein insertion.*

Administer with extreme care to elderly, very ill, those with limited pulmonary reserve because of possibility of apnea and/or cardiac arrest; concomitant use of barbiturates, alcohol or other CNS depressants increases depression with increased risk of apnea; have resuscitative facilities available. When used with narcotic analgesic eliminate or reduce narcotic dosage at least 1/3; administer in small increments. Should not be administered to patients in shock, coma, acute alcoholic intoxication with depression of vital signs.

Has precipitated tonic status epilepticus in patients treated for petit mal status or petit mal variant status. Not recommended for OB use.

Efficacy/safety not established in neonates (age 30 days or less); prolonged CNS depression observed. In children, give slowly (up to 0.25 mg/kg over 3 minutes) to avoid apnea or prolonged somnolence, can be repeated after 15 to 30 minutes. If no relief after third administration, appropriate adjunctive therapy is recommended.

Precautions: If combined with other psychotropics or anticonvulsants, carefully consider individual pharmacologic effects—particularly with known compounds which may potentiate action of diazepam, *i.e.*, phenothiazines, narcotics, barbiturates, MAO inhibitors and antidepressants. Protective measures indicated in highly anxious patients with accompanying depression who may have suicidal tendencies. Observe usual precautions in impaired hepatic function; avoid accumulation in patients with compromised kidney function. Limit oral dosage to smallest effective amount in elderly and debilitated to preclude ataxia or oversedation (initially 2 to 2½ mg once or twice daily, increasing gradually as needed and tolerated).

The clearance of diazepam and certain other benzodiazepines can be delayed in association with Tagamet (cimetidine) administration. The clinical significance of this is unclear.

INJECTABLE: Although promptly controlled, seizures may return; readminister if necessary; not recommended for long-term maintenance therapy. Laryngospasm, increased cough reflex are possible during peroral endoscopic procedures; use topical anesthetic; have necessary countermeasures available. Hypotension or muscular weakness possible, particularly when used with narcotics, barbiturates or alcohol. Use lower doses (2 to 5 mg) for elderly/debilitated.

Adverse Reactions: Side effects most commonly reported were drowsiness, fatigue, ataxia. Infrequently encountered were confusion, constipation, depression, diplopia, dysarthria, headache, hypotension, incontinence, jaundice, changes in libido, nausea, changes in salivation, skin rash, slurred speech, tremor, urinary retention, vertigo, blurred vision. Paradoxical reactions such as acute hyperexcited states, anxiety, hallucinations, increased muscle spasticity, insomnia, rage, sleep disturbances and stimulation have been reported; should these occur, discontinue drug.

Because of isolated reports of neutropenia and jaundice, periodic blood counts, liver function tests advisable during long-term therapy. Minor changes in EEG patterns, usually low-voltage fast activity, observed in patients during and after diazepam therapy are of no known significance.

INJECTABLE: Venous thrombosis/phlebitis at injection site, hypoactivity, syncope, bradycardia, cardiovascular collapse, nystagmus, urticaria, hiccups, neutropenia. In peroral endoscopic procedures, coughing, depressed respiration, dyspnea, hyperventilation, laryngospasm, pain in throat or chest have been reported.

Dosage: Individualize for maximum beneficial effect.

ORAL: *Adults*: Anxiety disorders, relief of symptoms of anxiety—Valium (diazepam/Roche) tablets, 2 to 10 mg b.i.d. to q.i.d., or 1 or 2 Valrelease capsules (15 to 30 mg) daily. Acute alcohol withdrawal—tablets, 10 mg t.i.d. or q.i.d. in first 24 hours, then 5 mg t.i.d. or q.i.d. as needed, or 2 capsules (30 mg) the first 24 hours, then 1 capsule (15 mg) daily as needed. Adjunctively in skeletal muscle spasm—tablets, 2 to 10 mg t.i.d. or q.i.d., or 1 or 2 capsules (15 to 30 mg) once daily. Adjunctively in convulsive disorders—tablets, 2 to 10 mg b.i.d. to q.i.d.; or 1 or 2 capsules (15 to 30 mg) once daily.

Geriatric or debilitated patients: Tablets—2 to 2½ mg 1 or 2 times daily initially, increasing as needed and tolerated (see Precautions). Capsules—1 capsule (15 mg) daily when 5 mg oral Valium has been determined as the optimal daily dose.

Children: Tablets—1 to 2½ mg t.i.d. or q.i.d. initially, increasing as needed and tolerated (not for use in children under 6 months). Capsules—1 capsule (15 mg) daily when 5 mg oral Valium has been determined as the optimal daily dose (not for use in children under 6 months).

INJECTABLE: Usual initial dose in older children and adults is 2 to 20 mg I.M. or I.V., depending on indication and severity. Larger doses may be required in some conditions (tetanus). In acute conditions injection may be repeated within 1 hour, although interval of 3 to 4 hours is usually satisfactory. Lower doses (usually 2 to 5 mg) with slow dosage increase for elderly or debilitated patients and when sedative drugs are added. (See Warnings and Adverse Reactions.)

For dosages in infants and children see below; have resuscitative facilities available.

I.M. use: by deep injection into the muscle.

I.V. use: inject slowly, take at least one minute for each 5 mg (1 ml) given. Do not use small veins, i.e., dorsum of hand or wrist. Use extreme care to avoid intra-arterial administration or extravasation. Do not mix or dilute Valium with other solutions or drugs in syringe or infusion flask. If it is not feasible to administer Valium directly I.V., it may be injected slowly through the infusion tubing as close as possible to the vein insertion.

Moderate anxiety disorders and symptoms of anxiety, 2 to 5 mg I.M. or I.V., and severe anxiety disorders and symptoms of anxiety, 5 to 10 mg I.M. or I.V., repeat in 3 to 4 hours if necessary; acute alcohol withdrawal, 10 mg I.M. or I.V. initially, then 5 to 10 mg in 3 to 4 hours if necessary. Muscle spasm, in adults, 5 to 10 mg I.M. or I.V. initially, then 5 to 10 mg in 3 to 4 hours if necessary (tetanus may require larger doses), in children *administer I.V. slowly*; for tetanus in infants over 30 days of age, 1 to 2 mg I.M. or I.V., repeat every 3 to 4 hours if necessary; in children 5 years or older, 5 to 10 mg repeated every 3 to 4 hours as needed. Respiratory assistance should be available.

Status epilepticus, severe recurrent convulsive seizures (I.V. route preferred), 5 to 10 mg adult dose administered slowly; repeat at 10- to 15-minute intervals to 30 mg maximum. Repeat in 2 to 4 hours if necessary; keeping in mind possibility of residual active metabolites. Use caution in presence of chronic lung disease or unstable cardiovascular status. Infants (over 30 days) and children (under 5 years), 0.2 to 0.5 mg slowly every 2 to 5 min., up to 5 mg (I.V. preferred). Children 5 years plus, 1 mg every 2 to 5 min., up to 10 mg (slow I.V. preferred); repeat in 2 to 4 hours if needed. EEG monitoring may be helpful.

In endoscopic procedures, titrate I.V. dosage to desired sedative response, generally 10 mg or less but up to 20 mg (if narcotics are omitted) immediately prior to procedure; if I.V. cannot be used, 5 to 10 mg I.M. approximately 30 minutes prior to procedure. As preoperative medication, 10 mg I.M., in cardioversion, 5 to 15 mg I.V. within 5 to 10 minutes prior to procedure. Once acute symptomatology has been properly controlled with injectable form, patient may be placed on oral form if further treatment is required.

Management of Overdosage: Manifestations include somnolence, confusion, coma, diminished reflexes. Monitor respiration, pulse, blood pressure; employ general supportive measures, I.V. fluids, adequate airway. Use levarterenol or metaraminol for hypotension. Dialysis is of limited value.

How Supplied:

ORAL: Valium scored tablets—2 mg, white; 5 mg, yellow; 10 mg, blue—bottles of 100 and 500; Prescription Paks of 50, available in trays of 10, Tel-E-Dose® packages of 100, available in trays of 4 reverse-numbered boxes of 25 and in boxes containing 10 strips of 10.

Valrelease (diazepam/Roche) slow-release capsules—15 mg (yellow and blue), bottles of 100; Prescription Paks of 30.

INJECTABLE: Ampuls, 2 ml, boxes of 10; Vials, 10 ml, boxes of 1; Tel-E-Ject® (disposable syringes), 2 ml, boxes of 10. Each ml contains 5 mg diazepam, compounded with 40% propylene glycol, 10% ethyl alcohol, 5% sodium benzoate and benzoic acid as buffers, and 1.5% benzyl alcohol as preservative.

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SCIENTIFIC ARTICLE

Nuclear Magnetic Resonance Imaging — Current State

Edward J. Easton, Jr., M.D.

WHILE nuclear magnetic resonance, discovered in 1946, has been a powerful nondestructive tool in analytic chemistry for many years, nuclear magnetic resonance imaging is a rapidly improving new diagnostic technique receiving a great deal of attention and generating excitement in the medical community. This paper will attempt to elucidate some of the basic principles of nuclear magnetic resonance as well as discuss radiofrequency waves, data collection, magnet technology and the results of early human investigations. The final section links developments in NMR and North Carolina physicians.

Basic Principles of Nuclear Magnetic Resonance (NMR)

It is well known that the human body is transparent to x-rays but opaque to intermediate wave lengths such as visible light. Tissue is also transparent to radiowaves at the low end of the electromagnetic spectrum. NMR involves imaging of these low energy radiofrequency waves. Since these radiofrequencies are of very low energy, they are non-ionizing and generally considered harmless.

The basic physics of NMR involve terminology unfamiliar to most of the medical community. Certain nuclei such as hydrogen contain an uneven number of protons and neutrons and possess intrinsic spin. When these nuclei are placed in a strong magnetic field, a slight majority line up along the lines of magnetic force and begin to wobble or "precess" like a child's top, at a frequency determined by the strength of the magnetic field applied. If the gradient magnetic fields are added to the static magnetic fields, spatial information can be obtained. That part of the object in the highest magnetic field sends back the highest resonant radiofrequency and its location can be discriminated from other locations within the object being scanned. Radiofrequency coils transmit radiofrequency waves which disturb the magnetization of nuclei in the sample, and these nuclei then radiate weak characteristic radiofrequencies which are detected by receiving radiofrequency coils. Radiofrequency data undergo mathematical computerized Fourier transformation which gives the spatial and spin density information and allows image production.

Radiofrequency Pulse Sequence

The object being scanned can be perturbed by a 90° or 180° radiofrequency pulse. One can vary the exposure parameters by varying the sequence of pulse radiofrequencies, with different exposure parameters producing significantly different image appearances. One can vary the time between radiofrequency pulses and the echo obtained, or one can vary the repetition interval of pulse sequences. A preliminary 180° inverting pulse followed by a 90° pulse produces an inversion recovery sequence which is T1 relaxation time dependent and demonstrates excellent soft tissue discrimination (figure 1). Another important pulse sequence is the so-called spin echo sequence which is dependent on a second relaxation parameter called T2 relaxation time. Spin echo images highlight pathologic changes against relatively featureless host tissue and appear complimentary to T1 images.[1] Saturation recovery pulse sequences show the best anatomical definition but do not allow discrimination of normal from abnormal tissues as well as inversion recovery or spin echo images.[2] Damadian reported prolonged T1 values in malignant tissue compared with normal host tissue and predicted that NMR will enable differentiation of benign from malignant tissue. While malignant tissue generally has a prolonged T1 relaxation time, exceptions to the rule have been found.[2] It can be seen that NMR images transcend mere anatomic detail and provide physiologic information.

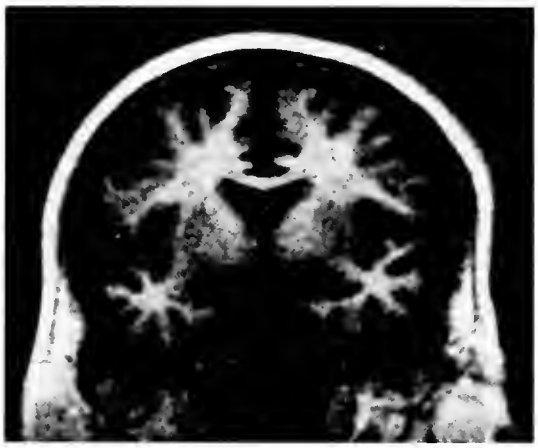

Figure 1. *Coronal head: coronal slice of cranial anatomy utilizing inversion recovery pulse technique displaying the effects of T1 relaxation time. Note the gray-white matter differentiation.*

From the Departments of Nuclear Medicine and Radiology, Charlotte Memorial Hospital and Medical Center, Charlotte, NC 28232.

Data Collection

Early NMR data collection involved collection of information from a single point or line. Since the work of Lauterbur, two-dimensional and three-dimensional NMR imaging has become possible. Since NMR is basically under electrical or software control, a great variety of images can be obtained from any angle without changing the position of the patient. True three-dimensional slices, unique to NMR, with up to 32 slices in a single scan are now possible.[3] Three-dimensional imaging has the advantage of efficient data collection with any number of thin slices or angles and obviates the need for pre-scanning localization. Direct coronal or sagittal images are obtainable without loss of resolution (figure 1). Images may be collected according to physiological monitors, and NMR gated heart scans (figure 2) may prove clinically efficacious. Simultaneous collection of several slices or whole volume collection suggests that NMR will be compatible with existing diagnostic modalities in regard to patient throughput.[4]

Magnet Technology

Generation of powerful static magnetic fields can be performed by resistive, superconducting or permanent magnets. While the earth's magnetic field is 0.6 gauss, magnets used in NMR produce magnetic field strengths of 400 to 15,000 gauss. Resistive electromagnets are less expensive than superconducting magnets, have proven reliability, and require less sophisticated support personnel. Resistive NMR imaging systems probably will cost from $800,000 to $1.2 million. In addition, they have the significant operational expense of high electrical energy consumption. The maximum practical magnetic field strength of resistive systems is .15 Tesla (1.5 kilogauss). Superconducting NMR imaging systems cost in excess of $1.. million, have the advantage of greater field strength an homogeneity. Greater field strength produces improve images since the signal to noise ratio improves exponential ly approximately to the three halves power of magneti field strength. In addition, superconducting magnets ar necessary for ^{31}P NMR imaging and spectroscopy. Howev er, the cost of liquid helium and liquid nitrogen coolant necessary to keep the superconducting magnet near abso lute temperature is significant. Superconducting magnet have not yet proven their reliability in the clinical setting require more sophisticated support personnel, and require a significantly larger imaging site. In spite of these disadvantages, however, some investigators feel that superconducting magnets will eventually dominate the NMR imaging field.

Recently, permanent magnets have been introduced in NMR imaging. They have the advantage of no operational electrical or supercoolant expense and also possess the advantage of having no peripheral magnetic field. However, images from these magnets are currently not up to the industry standards. Permanent magnets have the disadvantage of requiring very close temperature monitoring and have tremendous weight with a .3 Tesla magnet weighing up to 100 tons. Future improvements in NMR imaging will not merely involve progressively stronger magnetic fields because higher magnetic fields produce higher radiofrequencies which become attenuated within the body and, thus, become unavailable for imaging. In addition, T1 relaxation times become prolonged with higher magnetic field strengths. Other factors expected to improve the quality of NMR images include different pulse sequences, paramagnetic contrast agents, improved radiofrequency coil design and shielding.

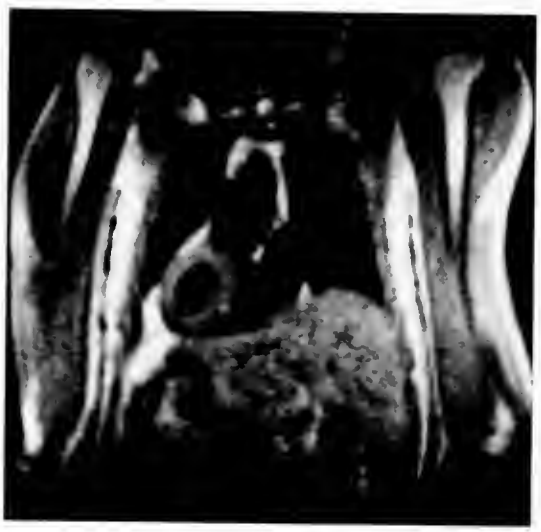

Figure 2. *Gated heart: coronal view of cardiac function in ventricular systole from NMR gated heart scan. No contrast agents were used. Copyright 1982 by Technicare Corporation. All rights reserved.*

Early Human Investigational Results

The FDA has not given pre-market approval to any NMR imaging device at the time of this writing. Patients with pacemakers and large metal prostheses will be excluded from the initial trials. However, the earliest innovative NMR imaging sites, established to demonstrate NMR safety and clinical efficacy, have indicated very encouraging initial results. In the nervous system, NMR has already shown itself to be superior to CT in gray-white matter differentiation (figure 1) and in lesion detection in demyelinating diseases such as multiple sclerosis.[5] Data suggest that NMR images have significant diagnostic capability for acute cerebral ischemia and infarction. According to Dr. Benjamin Kaufman, NMR imaging should be the initial study of the posterior fossa and medullary cervical junction.[6] He further states that NMR images demonstrate abnormalities in the mid brain in a fashion not attainable with any other imaging modality. Since dense cortical bone of the posterior fossa contains no NMR signal, the posterior fossa and medullary cervical junction can be examined without the artifact common with CT. In addition, Dr. Kaufman feels that NMR should be the initial examination of the sellar and suprasellar region.[7] Many investigators have demonstrated that the entire spinal cord can be visualized with NMR without the use of contrast material (figure

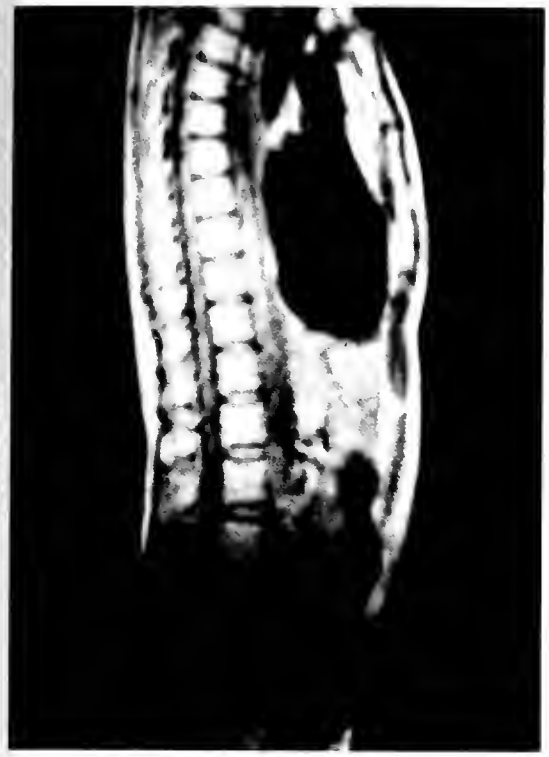

Figure 3. *Sagittal spine: sagittal slice of the dorsolumbar spine area. Image obtained using two-dimensional acquisition and saturation recovery pulse technique. Note the direct visualization of the spinal cord without contrast agents. Copyright 1982 by Technicare Corporation. All rights reserved.*

3), allowing such diagnoses as tonsillar herniation. Vertebral bodies and discs can be seen, and work is ongoing to determine whether NMR will add to existing modalities in the diagnosis of spinal disease. A disadvantage of NMR is that detection of calcification is poor and there may be difficulty separating cerebral edema from cerebral mass with the current state of technology. Variation of pulse sequences or injection of paramagnetic substances may alleviate this problem and further add to the specificity of NMR.

In the chest, NMR can evaluate hilar and mediastinal lymphadenopathy. Cohen states that NMR allows tissue separation and differentiation superior to oblique tomography and CT of the hilum and mediastinum while avoiding the use of contrast material.[8] Because rapidly flowing blood contains no NMR signal, the great vessels have no signal and appear dark while mediastinal and hilar structures have high signal intensity and appear white. The lack of signal from rapidly moving blood, known as the "flow void" phenomenon, is helpful for evaluation of all vascular structures in the body. Thus, NMR appears to have potential as a vascular imaging system because of high spatial and contrast resolution, three-dimensional images and sensitivity to flow without injection of iodinated contrast materials. Evaluation of myocardial function and ischemia is ongoing. Gated images allow visualization of myocardial wall and chamber without contrast material, demonstrate heart valves and myocardial mass and motion (figure 2).

Abdominal NMR examination (figure 4) suggests NMR capability in the liver comparable to that of existing modalities.[9] In addition, NMR appears to provide functional gallbladder information. Renal NMR imaging differentiates cortical and medullary structure not seen by other imaging techniques. Renal masses and focal lesions have

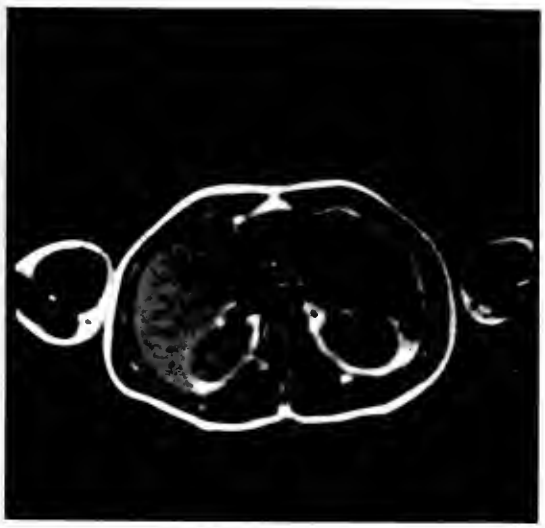

Figure 4. *Transverse abdomen: transverse slice of abdominal anatomy using saturation recovery pulse technique. Two-dimensional acquisition technique providing multiple one centimeter slices. Copyright 1982 by Technicare Corporation. All rights reserved.*

Figure 5. *Coronal knees: coronal view of knees from a three-dimensional acquisition data set. This acquisition technique reconstructs any slice at any angle about the region being scanned. Copyright 1982 by Technicare Corporation. All rights reserved.*

been seen quite well and other investigators report a high degree of adrenal visualization with high magnetic strength units.[10] A number of musculoskeletal applications are anticipated (figure 5). Other studies suggest NMR's ability to detect changes in cell chemistry prior to microscopic change. Thus, NMR imaging is likely to have a profound impact on clinical medicine.

Practical Considerations for the North Carolina Medical Practitioner

When and where will NMR systems be available?

Charlotte Memorial Hospital and Medical Center has a Technicare resistive NMR unit. Early in 1983, North Carolina Baptist Hospital will install a Picker resistive NMR unit and Duke University Medical Center will receive a General Electric superconducting NMR unit. These centers will be performing NMR scans on selected patient populations, initially according to a research protocol comparing NMR scans with other state-of-the-art existing modalities. After FDA pre-market approval is obtained by specific manufacturers, scans will be performed on a more routine basis.

Which patients might benefit from NMR imaging?

While the NMR applications are expected to expand, patients who might benefit from NMR imaging include the following: (1) patients suspected of demyelinating diseases, such as multiple sclerosis; (2) patients whose signs and symptoms are referable to the posterior fossa or brain stem; (3) patients with focal neurological signs or symptoms, unexplained by other tests; (4) patients with abnormalities of the spinal cord or sellar or suprasellar region; (5) patients with suspected mediastinal or hilar disease. It is expected that general practitioners and specialists will refer such patients for NMR scanning.

What will NMR scans cost?

Before the pre-market approval is obtained from the FDA, there will be no charge to the patient or to the patient's insurance company for NMR scans. During this time, some major manufacturers of NMR equipment may partially subsidize investigative efforts by major medica centers. Third party payers are expected to address th question of reimbursement for NMR scans after FDA pre market approval has been obtained. NMR scans are ex pected to be as expensive as, or slightly more expensiv than, CT scans because of the cost of the equipment operating expenses and more extensive site preparation. I is expected that NMR machines eventually will be placed i mobile vans to serve small hospitals and communities.

Acknowledgment

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SCIENTIFIC ARTICLE

Hyperthyroidism or Pheochromocytoma?

K. Patrick Ober, M.D.

THE clinical manifestations of thyrotoxicosis are similar to those of pheochromocytoma, reflecting the hypermetabolic, hyperadrenergic state that is common to both disorders. In past years, these two diseases have been confused for one another, and patients with a pheochromocytoma have even undergone unnecessary thyroidectomy.[1] With current laboratory methodology, however, a definite and accurate diagnosis of these diseases can readily be made without difficulty. This paper reports a patient with a pheochromocytoma associated with an elevated thyroxine level that returned to normal after removal of the adrenal tumor. There was a hazardous delay in the diagnosis and appropriate therapy of the pheochromocytoma.

Report of a Case

A 20-year-old woman sought medical care after 25 weeks of pregnancy because of progressive fatigue, malaise, nausea, tachycardia, night sweats, and a 10 pound weight loss since the onset of pregnancy. On examination, the patient appeared to be hypermetabolic, and there was also evidence of dehydration. Vital signs included a pulse of 128, blood pressure 75/48 mm Hg, and a temperature of 97.4° F. The patient had a prominent stare with lid lag, a slightly enlarged thyroid gland, and a hyperdynamic precordium. After hydration, blood pressure was variable, ranging up to 240/120, and the symptoms of diaphoresis, tachycardia, and nausea persisted. Thyroid function tests (confirmed by repeat determination by the hospital laboratory) revealed a total thyroxine (T_4) of 30.0 μg/dl (normal 4.5-11.5), triiodothyronine resin uptake (T_3 RU) of 28% (normal 30-40), and free thyroxine index of 8.5 (normal 1.7-4.7). Additional studies were sent to a reference laboratory (Metpath, Teterboro, NJ); these included a triiodothyronine (T_3) of 224 ng/dl (normal 80-220), and free T_4 of 3.3 ng/dl (normal 0.8-2.3).

The patient was transferred to North Carolina Baptist Hospital, where the findings were unchanged; she was profusely diaphoretic and clinically hypermetabolic, with lid lag and a nontender diffusely enlarged thyroid that was 1½ times normal size. Pulse was 100 with blood pressure 140/80 and temperature 100° F. The patient was started on propranolol, propylthiouracil, and hydrocortisone sodium succinate. This led to resolution of most of her symptoms, although she still had episodic diaphoresis, nausea and vomiting, and variable blood pressure levels ranging from 100/60 to 160/120. Because of persistent tachycardia, the propranolol dose was increased. On the third hospital day, she abruptly became diaphoretic and developed abdominal cramps, and was found to have tachycardia (pulse 150) with frequent premature ventricular contractions, a blood pressure of 300/180, and a temperature of 106° F. This was followed by a generalized tonic-clonic seizure, and she later developed an episode of ventricular tachycardia that responded to lidocaine administration. At other times, she had episodes of isorhythmic atrial-ventricular dissociation with a junctional pacemaker. Because of decreasing confidence in the diagnosis of thyrotoxicosis and concern about the possibility of pheochromocytoma, propylthiouracil was discontinued and the propranolol dose was decreased. Intravenous phentolamine was started and then changed to oral phenoxybenzamine. This resulted in normalization of the blood pressure and resolution of all symptoms. The T_4 from the second hospital day returned at 14.6 μg/dl (normal 4.5-11.0), with a T_3 RU of 21.7% (normal 24-34), yielding a high-normal free thyroxine index of 11.0; T_3 was 175 ng/dl (normal 85-218). Repeat thyroid studies on the fifth day included a T_4 of 11.3 μg/dl, T_3 RU 27.9%, free thyroxine index 10.8 and T_3 105 ng/dl. Antimicrosomal and antithyroglobulin antibodies were undetectable. A free T_4 by equilibrium dialysis (Smith Kline Clinical Laboratories, Tampa) was 2.8 ng/dl (normal 0.8-2.4). Urine catecholamines were 3016 μg/24 hr (normal 0-230), vanillylmandelic acid (VMA) 86 mg/24 hr (normal 1-8), and plasma catecholamines 1633 pg/ml (normal 120-465). Fractionation of plasma catecholamines showed a dopamine of 164 pg/ml (normal 0-90), epinephrine 203 pg/ml (normal 0-55), and norepinephrine 1385 pg/ml (normal 65-320). Ultrasound and limited computerized tomography revealed a large left adrenal mass. After continued adrenergic blockade and volume expansion, the patient underwent resection of a large (642 g) pheochromocytoma. Postoperatively, she has been free of symptoms, normotensive, and has had normal urine catecholamines (107 μg/24 hr) and normal free T_4 by equilibrium dialysis (1.3 ng/dl). She has given birth to a healthy infant, and both mother and child are currently doing well.

Comment

Hyperthyroidism may be difficult to diagnose clinically in a pregnant woman, since the findings of goiter, nervousness, diaphoresis, heat intolerance, and tachycardia can be

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seen in euthyroid pregnancies. Laboratory studies are essential for the confirmation of hyperthyroidism; with pregnancy, the estrogen effect of increased thyroid hormone binding globulin can cause an increase in total T_4, but free T_4 and free thyroxine index are normal in the euthyroid patient.

The patient described had numerous findings of a hypermetabolic state, including a 10 pound weight loss (which is even more impressive when one considers that this occurred during the course of pregnancy). The findings of increased free thyroxine index and increased free T_4 concentrations (measured by several different laboratories) would seem to make the diagnosis of thyrotoxicosis a sound one. However, the patient was eventually found to have a pheochromocytoma. The elevated thyroxine level seemed to be related to the pheochromocytoma, and probably did not indicate a concomitant thyrotoxic state; T_3 levels were all normal (taking into account the increased binding protein levels of pregnancy), and the free T_4 by equilibrium dialysis (the most sensitive measure of free T_4) became normal after removal of the pheochromocytoma.

In spite of the hypermetabolic features and increased thyroxine levels, several features of the patient's course could not be accounted for by hyperthyroidism alone, and these features eventually led to consideration of an alternate diagnosis. The finding of diastolic hypertension is unusual with hyperthyroidism; the thyrotoxic patient may have systolic hypertension and a widened pulse pressure, but the diastolic pressure is usually reduced. Furthermore, the adverse response to increased beta-adrenergic blockade (hypertensive crisis, hyperthermia, and seizure) would not be expected with thyrotoxicosis, where many of the manifestations reflect increased beta-adrenergic tone and are therefore expected to improve with beta-blockade. On the other hand, beta-blockade can worsen the hypertension in a patient with a pheochromocytoma by allowing alpha-adrenergic tone to predominate. The finding of labile diastolic hypertension along with the apparently adverse response to standard therapy for thyrotoxicosis led to consideration of the diagnosis of pheochromocytoma, and ultimately the correct diagnosis was established.

The elevated thyroid levels (which initially seemed to offer an explanation for most of the patient's symptoms and clinical findings) actually delayed establishment of the correct diagnosis. As indicated previously, the elevated thyroxine levels seemed to be secondary to the pheochromocytoma, and probably did not indicate a primary thyrotoxic state.

In theory, catecholamine excess could increase thyroxine production by several mechanisms. Norepinephrine has been shown to stimulate TSH production, probably by effects on the hypothalamus.[2] Another hyperadrenergic state, amphetamine abuse, has also been associated with hyperthyroxinemia,[3] and this effect is also presumably mediated through the hypothalamus. Because of the apparent importance of alpha-adrenergic tone on release of thyrotropin-releasing hormone, it may be significant that this patient's pheochromocytoma predominantly secreted norepinephrine.

Alternatively, the elevated T_4 levels may represent a direct effect of catecholamines on the thyroid, since the sympathetic nervous system has been shown to participate in the regulation of thyroid hormone secretion.[4] Thyroid tissue contains numerous sympathetic nerve fibers,[5] and alpha-adrenergic stimulation can lead to increased thyroid hormone release.[6] Again, the predominance of norepinephrine as the major secretory product of this patient's pheochromocytoma may be relevant.

Finally, it is possible that the hyperthyroxinemia was not directly related to the pheochromocytoma but instead represented a nonspecific response to an acute and severe nonthyroidal illness. Hyperthyroxinemia can occur with medical[7, 8] or psychiatric[9] illnesses, and is usually a transient phenomenon, possibly related to the alterations in peripheral thyroid hormone metabolism that occur in acute illnesses. A recent study from the University of North Carolina reflects the magnitude of this problem: the serum T_4 index was increased in 11.7% of unselected consecutive admissions to a medical service.[10] Unlike other acute nonthyroidal illnesses with hyperthyroxinemia (where patients seldom have clinical evidence of hyperthyroidism), patients with pheochromocytoma have symptoms that are very suggestive of thyrotoxicosis. As illustrated here, this situation may delay the diagnosis of a potentially lethal disease, and lead to therapy of presumed thyrotoxicosis with beta-adrenergic blockers which may exacerbate the hypertension of pheochromocytoma.[11]

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SCIENTIFIC ARTICLE

Clinicopathologic Correlations in 566 Consecutive Renal Biopsies from North Carolina

J. Charles Jennette, M.D.

THE diagnostic spectrum of renal diseases reported by a nephropathologist is a function of three major factors: 1) the patient population in the referral region; 2) the clinical criteria considered by the referring nephrologists as indications for performing renal biopsies; and 3) the techniques, morphologic criteria and nomenclature system used by the pathologist to arrive at a diagnosis. The study reported here was undertaken to evaluate the spectrum of pathologic diagnoses rendered on renal biopsy specimens submitted by nephrologists practicing in North Carolina, and to correlate the pathologic diagnoses with certain clinical features present at the time of biopsy. The correlations thus identified between pathologic entities and clinical parameters were found to be the result of not only the close relationship between the nature of renal parenchymal injury and the resultant clinical abnormalities, but also the bias introduced by the criteria used by nephrologists in selecting patients for biopsy.

Methods

Five hundred sixty-six consecutive renal biopsy cases with adequate tissue and clinical data submitted to The University of North Carolina at Chapel Hill Department of Pathology during 1980-1982 by nephrologists from all regions of North Carolina were included in the study. Biopsies of renal allografts and biopsy cases referred from other states were excluded. Approximately 17% of cases were submitted by nephrologists at North Carolina Memorial Hospital with the remainder coming from the following nephrologists and urologists: Karl Brandspigel (Elizabeth City), Thomas E. Burkart (Greenville), Joe T. Chandler (Charlotte), Jose A. Diaz-Buxo (Charlotte), Charles D. Farmer (Charlotte), Alfred L. Ferguson (Greenville), Charles E. Frazier (Greensboro), Amon L. Funderburk (Winston-Salem), Ronald L. Garber (Greensboro), George A. Glaubiger (Raleigh), Steven H. Grossman (E.C.U. School of Medicine), Hampton Hubbard (Clinton), Joseph K. Keener (Raleigh), P. Wayne Kendrick (Greenville), Roger W. Lamanna (Wilson), Richard H. Merrill (E.C.U. School of Medicine), G. Andrew Metzger (Lenoir), A. H. Moss (Greensboro), W. Joseph Newman (Greenville), David B. Olin (Greensboro), Joseph D. Russell (Wilson),

Table 1. Pathologic Nomenclature for Renal Lesions

Morphologic Diagnoses

1. no morphologic lesion
2. minimal change glomerulopathy
3. focal segmental glomerulosclerosis
4. focal or diffuse mesangioproliferative glomerulopathy
5. focal or diffuse proliferative glomerulonephritis
6. acute diffuse proliferative glomerulonephritis
7. crescentic (≥80%) glomerulonephritis
8. membranoproliferative glomerulonephritis (type I, II or III)
9. membranous glomerulopathy (stage I, II, III, IV or V)
10. chronic glomerulonephritis with advanced sclerosis
11. arterionephrosclerosis
12. thrombotic microangiopathy
13. preeclampsia/eclampsia
14. diabetic glomerulosclerosis
15. renal amyloidosis
16. light chain nephropathy
17. myeloma kidney
18. acute or chronic interstitial nephritis
19. acute tubular necrosis
20. end stage kidney

Morphologic Modifiers

I. with crescents (%) (5, 6, 8)*
II. with vasculitis (5, 7)
III. with secondary glomerulosclerosis
IV. with cortical necrosis (12, 19)

Diagnostic Modifiers

A. anti-GBM antibody mediated (5, 7)
B. IgA nephropathy with (1, 4, 5)
C. consistent with (C/W) Henoch-Schonlein purpura (1, 4, 5)
D. IgM mesangiopathy (1, 4)
E. poststreptococcal/postinfectious (4, 5, 6, 7, 8)
F. pathogenic antigen if identified (e.g. HBsAg)
G. lupus (4, 5, 9)
H. C/W cryoglobulinemia (5, 8)
I. C/W polyarteritis or Wegener's (5, 7)
J. C/W SBE or shunt nephritis (5, 8)
K. C/W hereditary nephritis or familial hematuria (4, 5)
L. C/W TTP, HUS, PSS or malignant hypertension (12)
M. C/W hypersensitivity reaction (18)
N. C/W pyelonephritis (18)

* Most common, but not exclusive morphologic diagnoses paired with the morphologic or diagnostic modifier.

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Specimens were examined by light, immunofluorescence and electron microscopy using routine techniques. The diagnostic nomenclature system used is shown in table 1. The morphologic diagnoses (1 through 10) and morphologic modifiers (I through IV) could be determined by light and electron microscopy alone. Precise addition of the diagnostic modifiers (A through M) required in addition immunofluorescence microscopy, clinical data or tissue from nonrenal sites. Representative diagnoses derived from this nomenclature system are as follows: anti-GBM antibody mediated diffuse proliferative glomerulonephritis with 25% crescents, IgA nephropathy with focal mesangioproliferative glomerulopathy, thrombotic microangiopathy with focal cortical necrosis consistent with hemolytic uremic syndrome. For the purpose of data analysis for this publication, the morphologic diagnostic categories were slightly modified into the eighteen given in table 2. The major change was the grouping of focal and diffuse mesangioproliferative glomerulopathies into one category, and of focal, diffuse and acute diffuse proliferative glomerulonephritides into one category. Cases designated "mesangioproliferative" had no glomerular light microscopic abnormalities other than mesangial hypercellularity. Therefore cases with glomerular polymorphonuclear leukocyte influx, necrosis, sclerosis, adhesions or crescent formation were excluded from this category. Cases included in the "arterionephrosclerosis" category were those in which this was the only pathologic process present, thus excluding cases where some degree of arteriosclerosis was present along with another disease process that was the basis for the clinical manifestations. The category designated "other" contained a heterogeneous collection of lesions including combination lesions (e.g., membranous glomerulopathy with hypersensitivity acute interstitial nephritis), preeclampsia/eclampsia, myeloma kidney, familial hematuria, hereditary nephritis and a few unclassified nonspecific lesions.

The clinical data were derived from clinical information sheets submitted with the specimens. Cases without adequate clinical data were not included in the study. A patient was considered to have renal insufficiency if the serum creatinine was greater than 1.5 mg/dl. A clinical score for the glomerulopathies was calculated by totaling the percentage of patients with hematuria, proteinuria and insufficiency. Therefore, a pathologic category in which 100% of patients had only one of these abnormalities would have a score of 100, while a category in which 100% had all three abnormalities would have a score of 300.

Results

As can be seen in table 2, nephrologist in North Carolina examined patients with a broad spectrum of renal diseases by renal biopsy during 1980, 1981, and 1982. The first nine categories are predominantly glomerulopathies and accounted for 72% of biopsy cases. The remaining diseases were primarily tubulointerstitial lesions and systemic diseases, including vasculopathies, that produce renal parenchymal lesions.

The glomerulopathies had quite varied clinical features at the time of biopsy, but the clinical presentations of individual morphologic categories were more homogeneous (table 2). Consequently, particular clinical presentations were most often a result of certain pathologic processes (table 3). Proteinuria was a frequent abnormality in all the glomerulopathies, except for those patients with asymptomatic hematuria resulting from mesangioproliferative glomerulopathy. Proteinuria, usually in the nephrotic range, in the absence of hematuria or insufficiency was

Table 2. Frequency of Pathologic Entities and Incidence of Clinical Features

Number of Cases	Pathologic Diagnosis	Clinical Features: hematuria:	+	0	+	+	0	+	0	Mean Age
		proteinuria:	0	+	+	+	+	0	0	
		insufficiency:	0	0	0	+	+	+	+	
15	minimal change glomerulopathy		0*	93	0	0	7	0	0	39.1
100	membranous glomerulopathy		0	57	16	8	19	0	0	44.4
36	focal segmental glomerulosclerosis		0	25	14	17	44	0	0	32.9
19	membranoproliferative glomerulonephritis		5	21	0	53	21	0	0	36.5
71	mesangioproliferative glomerulopathy		21	41	23	4	11	0	0	26.1
95	proliferative glomerulonephritis		1	17	31	33	17	2	0	35.8
37	proliferative glomerulonephritis with crescents†		3	0	8	73	8	8	0	45.5
24	crescentic glomerulonephritis‡		0	0	4	88	0	4	4	46.4
11	chronic glomerulonephritis		0	0	0	0	91	0	9	43.4
28	diabetic glomerulosclerosis		0	21	7	4	64	0	4	44.1
13	renal amyloidosis		0	62	8	0	31	0	0	60.5
15	thrombotic microangiopathy		0	0	0	47	33	7	13	47.8
20	arterionephrosclerosis		0	0	0	30	35	0	35	52.9
10	acute tubular necrosis		0	0	0	20	40	0	40	52.1
12	acute interstitial nephritis		0	0	0	8	58	0	33	52.0
11	chronic interstitial nephritis		0	0	0	9	82	9	0	44.2
7	end stage kidney		0	0	0	29	57	0	14	47.6
42	other		10	12	2	26	33	5	12	43.5

* % of cases
† less than 80% crescents
‡ 80% or more crescents

Table 3. Incidence (%) of Primary Glomerulopathies in Patients with Certain Clinical Features at the Time of Biopsy and the Clinical Score for Each Glomerulopathy Category

	Minimal change GP†	Membranous GP	Focal segmental GS	Mesangio-proliferative GP	Proliferative GN	Membrano-proliferative GN	Proliferative GN with crescents	Crescentic GN
hematuria alone n = 18	0	0	0	83	6	6	6	0
proteinuria alone‡ n = 129	11	44	7	22	12	3	0	0
hematuria & proteinuria n = 70	0	23	7	23	41	0	4	1
insufficiency n = 179	1	15	12	1	27	8	18	12
clinical score§	107	151	192	142	217	227	270	288

† GP = glomerulopathy GS = glomerulosclerosis GN = glomerulonephritis.
‡ greater than 90% of this group had nephrotic range proteinuria.
§ clinical score = % with hematuria + % with proteinuria + % with insufficiency.

most often due to membranous glomerulopathy and mesangioproliferative glomerulopathy in the biopsy population evaluated (table 3). However, the morphologic category that had the highest proportion of patients with a purely nephrotic presentation was minimal change glomerulopathy. The clinical severity of renal dysfunction correlated with the extent of destructive morphologic injury identified in the biopsy specimen, with minimal change glomerulopathy having the lowest clinical score (107) and crescentic glomerulonephritis the highest (288).

Included within the morphologic categories of the glomerulopathies were more specific diagnostic entities. Fifty-four cases of IgA nephropathy were diagnosed during the study interval. These cases were divided among the morphologic categories mesangioproliferative glomerulopathy (11 cases), proliferative glomerulonephritis (31 cases), and proliferative glomerulonephritis with crescents (12 cases). The clinical severity of cases of IgA nephropathy correlated with the degree of morphologic injury, with mesangioproliferative IgA glomerulopathy having a clinical score of 182 and proliferative IgA glomerulonephritis with crescents having a score of 267. Thirty-three cases of lupus nephritis were divided among the morphologic categories mesangioproliferative glomerulopathy (2 cases), proliferative glomerulonephritis (22 cases), and membranous glomerulopathy (9 cases). Twenty-one of 24 IgM mesangiopathy cases had a mesangioproliferative glomerulopathy and three a proliferative glomerulonephritis. Six of these 24 patients had asymptomatic hematuria, and the remainder had proteinuria usually with the nephrotic syndrome and also accompanied by hematuria in five patients and insufficiency in three patients. All seven patients with anti-glomerular basement membrane antibody mediated glomerulonephritis had some degree of crescent formation with three having greater than 80% of glomeruli involved by crescents. Only two of these seven patients had clinical evidence of pulmonary hemorrhage (Goodpasture's syndrome) at the time of biopsy. Five of the seven patients had hematuria, proteinuria and insufficiency at the time of biopsy, and the two who did not have all three abnormalities (one had hematuria and proteinuria, and the other proteinuria and insufficiency) had only 10% of glomeruli with crescents. In addition to cases resulting from anti-GBM antibody attack, cases of glomerulonephritis with crescents were also found associated with systemic vasculitis (including polyarteritis nodosa and Wegener's granulomatosis), post infectious glomerulonephritis, IgA nephropathy and idiopathic glomerular immune complex localization.

Most cases of diabetic glomerulosclerosis were from patients with renal insufficiency along with proteinuria and occasionally hematuria. A search for a reversible cause other than diabetes for progressive renal failure was the usual basis for biopsying these patients. Almost all of the patients found to have renal amyloidosis had no evidence for systemic amyloidosis at the time of renal biopsy, but were being evaluated to define a cause for the nephrotic syndrome. Cases of thrombotic microangiopathy came from patients with clinical evidence for thrombotic thrombocytopenic purpura, hemolytic uremic syndrome, progressive systemic sclerosis, or malignant hypertension. Specimens given a primary diagnosis of arterionephrosclerosis most often came from hypertensive black male patients who always had renal insufficiency. Both toxic and ischemic acute tubular necrosis were seen. All 12 cases of acute interstitial nephritis had a morphology consistent with a hypersensitivity rather than an infectious pathogenesis.

The mean age of all patients biopsied was 40.6. Only 10% of patients were children (less than 16 years old). As shown in table 2, the diagnostic category having the oldest mean age patients was renal amyloidosis and that having

the youngest was mesangioproliferative glomerulopathy. The surprisingly high mean age for minimal change glomerulopathy patients will be discussed later.

Discussion

The spectrum of renal disease examined by renal biopsy in North Carolina is quite broad. The data presented show that the pathologic diagnoses correlate with certain usual clinical presentations. However, these correlations are only true on the average, and individual patients within a given diagnostic category can vary substantially from the most common presentation for that particular pathologic category (table 2). Therefore, although good educated guesses based on clinical features can be made as to what the most likely morphological renal lesion is in a given patient, the only unequivocal way of determining the pathologic basis for that patient's renal disease is by renal biopsy evaluation.

The clinical features of some of the pathologic categories in the patient population studied were affected by the bias of nephrologists in selecting patients for biopsy. For example, although minimal change glomerulopathy is known to be predominantly a disease of childhood, the mean age of patients in North Carolina who were found to have this disease by renal biopsy was 39.1 years. This is the result of physicians in North Carolina following the currently accepted therapeutic approach to the management of the nephrotic syndrome in children. Since minimal change glomerulopathy is by far the most common cause of nephrotic syndrome in children and since it typically responds readily to steroid therapy, the accepted practice is to give a course of steroids to children with nephrotic syndrome and only biopsy if the response is not typical for minimal change glomerulopathy. Therefore, at the present time there should be very few children with minimal change glomerulopathy in a renal biopsy population even though this is a frequent lesion in children. Similarly, the relatively low incidence of arterionephrosclerosis as the principal pathologic process in renal biopsy patients compared with all patients with renal disease is due to the fact that renal biopsy is not often required for the clinical management of patients with hypertensive nephropathy.

The data presented are not at all suprising since they are what one would have predicted from our current knowledge of the clinicopathologic aspects of renal diseases and the accepted views on the clinical indications for performing renal biopsies. The data are therefore comforting in that they substantiate the validity of our contentions about the close correlation between renal pathology and the resultant clinical manifestations of renal diseases.

SCIENTIFIC ARTICLE

One Community's Approach to High Risk Infant Follow-Up

Martha K. Sharpless, M.D., and Patricia Gottschall, R.N., M.S.N.

FOLLOW-UP clinics for infants at high risk are becoming more common throughout North Carolina and the United States. These clinics serve as adjuncts to primary care physicians. Most of them are operated and staffed by personnel from larger community hospitals and medical centers. The approach to follow-up is usually multidisciplinary.[1] This paper describes one community's approach to high-risk infant follow-up and intervention.

High-risk infants are defined for purpose of follow-up in this clinic as infants with birth weight less than 1500 grams, infants who have experienced perinatal asphyxia, infants who have major central nervous system problems, infants with multiple congenital anomalies, or infants with a history of severe perinatal infections. The infants seen in follow-up are predominantly from the neonatal intensive care unit at Moses H. Cone Memorial Hospital, but some infants are referred from other community resources. The infants from the neonatal intensive care nursery in this hospital arrive from approximately four counties in the surrounding region.

In this community there is an eight bed Level III neonatal intensive care unit and an eight bed intermediate care nursery. A different approach to high-risk infant follow-up was necessary to meet the goals of the clinic which are to evaluate morbidity from a neonatal intensive care unit, to offer early diagnosis and intervention, to provide parent education and anticipatory guidance, and to train pediatric residents in high-risk infant evaluation and follow-up. The multiple disciplines were obtained primarily through three community agencies: the hospital in which the clinic is housed, the Guilford County Health Department, and the Developmental Evaluation Center. Moses H. Cone Memorial Hospital in the ambulatory setting provides four examining rooms and a conference room to house the clinic and its various disciplines. The hospital also provides administration support for scheduling, billing, record-keeping, and nursing support for growth measurements and scheduling laboratory examinations. In addition, the hospital provides a physical therapist and/or occupational therapist. The hospital auxiliary, a volunteer group, provides a volunteer to serve as clinic coordinator and to coordinate the scheduling of infants for initial and return visits. The hospital also initially provided a social worker. The Developmental Evaluation Center provides a social worker, and a speech and language pathologist. Most recently the Developmental Evaluation Center has also provided a psychologist one time per month. The health department provides a clinical nurse specialist who also has a dual role with the North Carolina High Priority Infant Identification and Tracking Program. The pediatrician in the clinic has a special interest in child development and is employed by the Area Health Education Center (AHEC) at Moses H. Cone Memorial Hospital and by the Developmental Evaluation Center. It is important to emphasize that all the staff in the clinic are professionals in child development who are provided for the clinic by their various agencies without remuneration. The exception to this is the volunteer clinic coordinator.

The clinic meets weekly and sees four to six infants in a four to five hour period. A nominal fee is charged for the visit to cover the administrative structure and space provided by Moses H. Cone Memorial Hospital. The total number of infants seen in the clinic from August 1980 to November 1982 was 172, and the show rate for the clinic is approximately eighty-five percent. The clinic time per patient is approximately one to one-and-one-half hours. The clinic multidisciplinary team decided to take an individualized approach to evaluation and treatment and therefore only general intervals for scheduling are followed. Infants from the neonatal intensive care unit are generally seen at four months gestational age or sooner if special request is made by the primary care physician or the neonatal intensive care nursery. Infants are seen at one month post-discharge if they have problems related to intracranial hemorrhage, seizures, or bronchopulmonary dysplasia. Subsequent appointments are based on the needs of the infant or family. Infants who are showing early indicators of central nervous system problems or physical problems are often seen within three to six months, and they may or may not be scheduled for only one discipline depending on the area of concern. The majority of infants are always seen again at approximately nine to twelve months gestational age if they have been seen at four months. Psychological tests are generally performed at age two to three years for more in-depth evaluation. If an infant is being carefully followed by an infant stimulation program or by the Developmental Evaluation Center, and the parents are follow-

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ing through with recommendations, he or she may not be rescheduled except by special request of the family. It should also be noted that an ophthalmologist sees the infants who have been in the neonatal intensive care unit during hospitalization and then again post-discharge in his office. An ophthalmologist is not present in the clinic.

Scheduling is performed by the volunteer in the clinic who contacts the family, both by telephone and in writing to confirm the appointment. The volunteer may also obtain some history, including developmental history, on those infants who are unable to follow through with the clinic visit. During the clinic session, the volunteer assists with clinic flow and ensures that the follow-up visit is scheduled. The show rate in the clinic has increased from 50 percent to 85 percent since volunteers have assumed the role of clinic coordinator.

The past medical record and other information obtained by the clinical nurse specialist is reviewed by all personnel prior to seeing the infant. The social worker or the clinical nurse specialist obtains the complete history from the parents, which includes prenatal history, nursery course, problems of the infant since discharge, history of eating, sleep, elimination, and general behavioral characteristics of the infant. The history also includes a social history of the home situation, parental coping, interactions, and economics. This history is then shared with other disciplines prior to their seeing the infant along with any observations that may have been made during the interview, particularly concerning parent-child interaction. The speech and language pathologist performs a hearing screening as well as evaluation of oral-motor function and reflexes. The occupational therapist or the physical therapist performs a neuromotor evaluation. The physician and the clinical nurse specialist perform a general physical, neurological, and neurodevelopmental assessment. Instruments used in the clinic include the Denver, Bayley, Gesell, Preschool Gesell, and the Carey Infant Temperament Scale. Anticipatory guidance and parent education are offered by each discipline in its specialty area when concerns are noted during the evaluation. The team then discusses problems and strengths of the child and the family based on the findings and originates a plan of care based on them.

A parent conference is held that same morning after the evaluation to discuss in detail the problems, strengths and recommendations. There are certain concepts stressed with each parent regardless of the findings: 1) development related to gestational age rather than chronological age; 2) the unique temperament and personality of each child, which cannot be compared with other siblings or other family members; 3) each family member's need for some time for privacy and recreation; and 4) each couple's need for some time for privacy and recreation. Referral to other community agencies is made with parental consent. There is personal contact with the agency when referral to other community agencies is made. All of the information gathered during the clinic visit is summarized and communicated to the parents and primary care physicians, in writing and/or verbally, depending on need. The clinical specialist arranges and performs home follow-up as indicated for further counseling and support. Areas of counseling include loss of the normal child, child development, and anticipatory guidance. The clinical nurse specialist contacts the infant tracking nurse in the family's county of residence for follow-up if the family is from another county.

This clinic functions as a strong patient advocate to assure that high-risk infants and their families receive the highest level of care possible to meet their needs. This is accomplished through coordination with their source of primary medical care. In summary, the three unique features of this clinic are the individualized approach to care, the utilization of multiple disciplines from three community agencies, and the use of volunteers for scheduling and coordinating the clinic.

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SCIENTIFIC ARTICLE

Diagnosis and Treatment of Cushing's Disease at Duke University (1977-1982)

Warner M. Burch, MD

THE diagnosis of Cushing's disease (pituitary-dependent adrenal hyperplasia) is made when the clinical signs of hypercortisolism are confirmed by biochemical determinations of elevated urine 17-hydroxycorticosteroids and free cortisols which do not suppress with low-dose dexamethasone (2 mg/day), but do suppress with a higher dose of dexamethasone (8 mg/day).[1] With the advent of transsphenoidal pituitary microsurgery, therapy of Cushing's disease in adults has changed over the last decade from bilateral adrenalectomy to transsphenoidal pituitary surgery (TPS). The cure rates with transsphenoidal pituitary surgery range between 85 and 94+ percent in patients with pituitary microadenomas.[2-4] The possibility of removing the pituitary tumor and maintaining normal pituitary function has made transsphenoidal pituitary surgery the treatment of choice in adult patients with Cushing's disease.[5] Over the last 5 years, 15 patients with Cushing's disease were evaluated and treated at Duke University Medical Center. This study reports the biochemical and radiographic findings as well as the results of treatment of this disorder in these patients.

Methods

In the interval from June 1977 to July 1982, 15 patients were diagnosed with Cushing's disease. All had clinical signs of glucocorticoid excess. The ages range from 11 to 60 years with a sex ratio of 13 females to 2 males. The diagnosis of adrenal hyperplasia was made using urine 17-hydroxycorticosteroids (17-OHCS) determinations[6] and demonstrating that there was no suppression of the urine 17-OHCS to 0.5 mg of dexamethasone every 6 hours for 48 hours. On the day before the dexamethasone (basal) and on the second day of the 2 mg per day of the dexamethasone, urine was collected for 24 hours. The patients were taking no other medications during the urine collections. Values are expressed as mg of 17-OHCS per g of creatinine. Normal basal 17-OHCS per mg of creatinine range between 2.0 and 6.5 and with 2 mg of dexamethasone per day are below 2.5 mg/g of creatinine. In addition, urine-free cortisol (UFC) was also determined.[7] Normal values are between 5 and 70 μg/24 hours (5-40 μg/g Cr).[8] Normal suppression of UFC to 2 mg dexamethasone in our laboratory is < 18 μg/24 hours. The diagnosis of pituitary-dependent adrenal hyperplasia was made by demonstrating that a larger dose of dexamethasone (2.0 mg every 8 hours for 48 hours with urine collection during the second day) suppressed the urine 17-OHCS 40 to 50% below basal excretion. In 10 patients, metyrapone 750 mg every six hours for four doses was given with the urine 17-OHCS determination on the following day (SU + 1). Patients with pituitary-dependent adrenal hyperplasia will respond with a brisk rise in the urine 17-OHCS to metyrapone. Patients with hypercortisolism secondary to adrenal tumor (adenoma or carcinoma) or ectopic ACTH production from non-pituitary tumors will not increase 17-OHCS secretion with metyrapone. ACTH was not routinely measured in these patients since over 50% of patients with Cushing's disease have ACTH levels within the normal range.[9]

Radiographic studies included cone-down views of the sella turcica with polytomography. Sella turcica were graded as to size and configuration with grade I being normal size with focal depression of the floor up to grade IV with enlargement and invasion of the tumor into the surrounding structures.[5] Many patients in the latter part of the study also had computer axial tomographies (CAT) performed with enhancement using intravenous contrast agents.

Treatment for each of the 15 patients was individualized. Eleven patients had transsphenoidal pituitary surgery as the primary form of therapy. Two patients received X-irradiation. One of these was an eleven-year-old female who received conventional cobalt therapy since over 80% of children with Cushing's disease have an excellent response to X-irradiation.[10] Two patients had bilateral adrenalectomy as the primary form of treatment. One patient was severely hypertensive and bilateral adrenalectomy was selected as the most expedient means to control this problem.

Results

Both basal 17-OHCS and UFCs were elevated in every patient. The 17-OHCS ranged from 8.6 to 38.5 mg/g Cr and UFC ranged from 91 to 580 μg/g Cr. These values are well above our normal ranges. Low-dose dexamethasone (2 mg/day) failed to suppress both urine and UFC values. High-dose dexamethasone (8 mg/day) decreased the 17-OHCS in these 15 patients to 61 ± 4% of baseline values and the UFC fell to 63 ± 6% of the basal UFC values. In two patients (#1, #2) the urine 17-OHCS did not fall

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below 40% of baseline values, a criterion proposed to demonstrate adequate suppression to high-dose dexamethasone.[11] These patients had Cushing's disease as judged by the excellent response in 17-OHCS to metyrapone, the surgical findings, and followup with no recurrence of hypercortisolism.

The radiographic findings of each patient are given in table 1. The sella turcica was normal in 12 of 15 cases. Focal changes were noted in two cases (Grade I). Only 1 of 15 patients (#1) had a large tumor with extension of the tumor into the sphenoid sinus. None of these patients had any visual field defects. No lesions were identified in eight patients who had CAT scans.

The form of therapy and followup after treatment are also given in table 1. Eleven patients were treated with transsphenoidal pituitary surgery (TPS) as their initial form of therapy. Six patients had resolution of their cushingoid status. Most females had return of menstruation. One patient (#8) had a recurrence of Cushing's disease following an apparent cure. Three patients (#5, 7, 15) remained cushingoid following surgery and had bilateral adrenalectomy to resolve their hypercortisolism. One patient (#12) died within two weeks after TPS with an apparent seizure with death due to aspiration. He had been discharged on an anticonvulsant because of a single seizure which occurred in the recovery room immediately postoperatively. No obvious source for the cause of the seizure disorder was identified. Another patient (#13) had transient diabetes insipidus postoperatively which resolved. These were the only operative complications.

Two patients received X-irradiation. Patient #9 was 11 years old and received conventional cobalt-65 irradiation (5000 RADS) with resolution of Cushing's disease. Patient #3 received heavy particle irradiation with subsequent cure of her disease. One patient (#4) was treated with TPS followed by 5000 RADS of conventional irradiation and developed optic atrophy two years later which was attributed to X-ray therapy.

Two patients (#2, #11) were treated initially with bilateral adrenalectomy. Patient #11 developed a change in the sella configuration along with cutaneous melanosis (Nelson's syndrome) two years following adrenalectomy. Later, a pituitary adenoma (1 cm) was found at TPS in Milwaukee, Wisconsin.

Discussion

Cushing's disease (pituitary-dependent adrenal hyperplasia) is a rare disorder. The criteria to separate the states

TABLE 1. Radiographic Findings, Treatment and Follow-Up in Cushing's Disease

Patient no.	Radiographic Findings: Sella turcica X-ray	CAT Scan	Treatment	Follow-up
1	Grade IV	ND	TPS — tumor which invaded the sphenoidal sinus removed + 5000 RADS post-surgery (7/77)	5 years — Cushing's resolved 17-OHCS 7.6 mg/g; UFC 13-31 μg/day
2	Normal	ND	Bilateral adrenalectomy; total weight: 14.8 g (8/77)	No increase in pigmentation
3	Normal	Neg	Heavy particle-irradiation Berkeley; 8000 RADS (4/78)	Normal — no recurrence
4	Normal	ND	TPS — pituitary adenoma; 5000 RADS postop (10/77)	No recurrence; moderate optic atrophy attributed to radiation Rx (4/80)
5	Normal	ND	Pituitary exploration normal — still Cushingoid then bilateral adrenalectomy; total weight: 23.1 g (3/78)	Increased pigmentation with no change in sella size — 4 years
6	Normal	Neg	TPS — 2.5 mm adenoma removed (6/78)	Normal — no recurrence
7	Normal	Neg	TPS — pituitary exploration, no tumor found (8/78)	Still Cushingoid — referred to UT-Knoxville for adrenal surgery
8	Normal	Neg	TPS — adenoma resected (9/78); 17-OHCS + UFC returned to normal	3 years — UFC 130 μg/g with return to Cushingoid state; Rx with Parlodel with normal UFC
9	Normal	ND	Conventional cobalt irradiation; 5000 RADS (3/79)	No recurrence
10	Grade I	ND	TPS — pituitary tumor identified and removed (3/79)	No recurrence
11	Normal	ND	Bilateral adrenalectomy; total weight: 15.2 g (2/80)	Increased pigmentation — 2 years later 1 cm pituitary adenoma resected
12	Grade I	Neg	TPS — 4 mm nodule resected; seizure postop (6/81)	Discharge 12 days post TPS — 1 day later, seizure — aspirated, died
13	Normal	Neg	TPS — no definite adenoma but 1/2 pituitary resected because suspicious area which had hyperplastic cells (5/81)	Transient diabetes insipidus — UFC normal (8-13 μg) for 1 year
14	Normal	Neg	Pituitary exploration — resected tumor (3/82)	Low UFC — 3 months post TPS
15	Normal	Neg	TPS — no lesion identified (4/82)	Still Cushingoid; Rx bilateral adrenalectomy (6/82)

Abbreviations: ND — not done; TPS — Transsphenoidal pituitary surgery; (Treatment month/date); UFC — Urine free cortisol

TABLE 2. Survey of Treatment Results with Transsphenoidal Pituitary Surgery in Cushing's Disease*

Responder	Institution	Cushing's Disease # Patient/Year	Transsphenoidal Surgery Recommended Routinely	Cure Rate	Recurrence
PC Carpenter	Mayo Clinic	15	Yes	80-85% 95% Microadenoma 55% Invasive tumor	4 recurrences in 105 cases since 1974
DN Orth	Vanderbilt	8-12	Yes	70%	Not Yet
DT Krieger	Mt. Sinai/NY	8	Sometimes	No data	Yes (2 cases)
JW Edmondson	IU-Indianapolis	5-10	Yes	80%+	No < 5%
CA Camargo	Stanford	5-6	Yes	80%	Yes 50%
RL Ney	Johns Hopkins	6	Sometimes	50%	Yes 50%
S Newmark	Tulsa	6	Yes	80%	None
DHP Streeten	Syracuse	4-6	Yes	80%	Yes 50%
R Horton	U. So. Cal.	6	Yes	90%	Yes (3-4 Patients)
M Berelowitz	Cincinnati	5	Yes	80%	None
A Lawrence	Loyola-Chicago	2-6	No	10%	Yes 100%
TF Frawley	St. Louis	3-5	No	75%	Yes (20-30%)
MJ Favus	M. Reese-Chicago	3-5	Yes	20-25%	None
LM Fishman	Miami	3	Yes	50%	Not clear (1 case known)
HG Tucker	MCV-Richmond	3	Yes	80%	2 recurrences in 15 cases
R Santen	Hershey	1-3	Yes	50%	2 recurrences
MO Thorner	UVA-Charlottesville	3	Yes	50%	None
FT Murray	UF-Gainsville	4	Yes	100%	None
D Bartuska	MCP-Philadelphia	2-3	Sometimes	100%	Not Yet
DM Cook	Portland	2	Yes	75%	None
JM Cerletty	Milwaukee	2-3	Yes	100%	Not Yet
E Furth	ECU-Greenville	2	Yes	50%	None
RE Ecklund	Nebraska	2-3	Yes	50%	Yes 50%
L Murdock	Calif.-Loma Linda	2-3	Yes	?	Not Yet
W Burch	Duke	3	Yes	55%	15%

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of hypercortisolism (pituitary-dependent adrenal hyperplasia, adrenal adenoma or carcinoma) from patients who have some clinical features suggestive of hypercortisolism are based on biochemical determinations of glucocorticoid excess. Both overnight dexamathasone suppression study with the measurements of fasting plasma cortisol (normal < 5 μg/dl)[11, 12] and the 24-hour urine-free cortisol are the most useful screening procedures.[13] We have used Liddle's criteria to diagnose Cushing's disease.[1] Although elevated urine 17-OHCS as expressed per 24 hours is not very helpful in making the diagnosis of Cushing's syndrome, it is much more sensitive when expressed as 17-OHCS/g creatinine.[11] One difficulty with urine 17-OHCS even when expressed as mg/g Cr is color interference in the assay of 17-OHCS caused by drugs. Urine-free cortisol as assayed by radioimmunoassay avoids this problem. In our 15 patients, both basal urine 17-OHCS and UFC gave comparable results with each patient clearly having values well above our normal ranges. Both urine 17-OHCS and UFC failed to fall with 2 mg dexamethasone/day but did with 8 mg/day. Thus, in none of our patients was there difficulty in making a diagnosis of Cushing's disease from other causes of hypercortisolism. In adrenal adenoma or carcinoma the ACTH levels are very low and an adrenal mass can usually be seen with CAT scan. Ectopic production of ACTH as a cause of Cushing's syndrome can be difficult to exclude from pituitary-dependent Cushing's disease, particularly in some benign tumors such as bronchial carcinoid or thymoma.[14] We had no evidence of any such problem in these patients. Obviously, the proper therapeutic approach depends on a correct diagnosis of the cause of hypercortisolism.

Our results with transsphenoidal pituitary surgery for Cushing's disease (55% cure-rate) are somewhat disappointing compared with the results recorded in the literature. One reason for our lower cure-rate with TPS is probably related to the surgical procedure itself. The tumor in Cushing's disease is quite different from the prolactinoma or tumor found in acromegaly. The pituitary adenoma is often small (< 5 mm in 50% of the cases), often deeply embedded in the pituitary gland, and often without well-defined margins.[15] Certainly our patients had small tumors (only 1 of 15 had an enlarged sella) and none of the 8 patients who had CAT scans had an identifiable lesion. Thus expertise in finding lesions is very important and rests entirely upon the experience of the neurosurgeon. A second possibility for our results is even more difficult to address. For years the question of whether Cushing's disease is a hypothalamic disease versus a pituitary disease has been debated. It is generally thought that an anterior pituitary corticotroph microadenoma is the primary cause of Cushing's disease on the basis of the sequence of events that follow successful resection of the tumor. There is immediate postoperative pituitary ACTH deficiency followed by recovery of normal ACTH secretory function over a period of several weeks to months with eventual return of normal diurnal rhythm and normal suppressibility with glucocorticoids.[2-4]

Finally, our results with TPS, though not nearly as successful as some reported in the literature,[2-4] may not be

unusual. In a recent survey of 30 endocrinologists across the United States, several centers had cure rates of 60% or below[16] (table 2).

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Don't Gag Me With A Spoon — Gastric Emptying at Home

Ronald B. Mack, M.D.

DURING a recent toxic encounter in our E.R., a very inexperienced intern was overheard telling a mother on the telephone to give her child mustard and water to drink since she did not have ipecac available in the home. When I heard about this anachronism a strange feeling suddenly came over me . . . I was in a time warp . . . I was young again . . . Glenn Miller was playing on the radio, I was getting ready for football practice and I was thinking about meeting a pretty redhead at the soda shop after the scrimmage . . . mustard and water indeed — Mr. Dow's Health Class, Boy Scout Troop 160, etc. The intern was summarily executed by firing squad — no blindfold or joint (the modern intern doesn't smoke cigarettes).

It is not news to anyone that syrup of ipecac should be available in all homes where preschool children live or visit. As mentioned in previous articles, this emetic should absolutely be available in the home of the grandparents. I feel very strongly that ipecac should also be available in all day care centers and nursery schools. I recently became aware of other situations where this type of emetic could be valuable, e.g., preschool children who visit nursing homes where potentially toxic materials literally abound, and those unusual circumstances where mothers take their preschool children to work with them in private homes, etc. Also, let us not forget the ever-increasing group of weekend fathers who may not feel that "child proofing" is necesary for the short time that the children will be visiting with them.

No matter where the syrup of ipecac is administered (E.R. or at home), the rules are the same, e.g., when it has been established that syrup of ipecac is indicated, the usual dose is 15 ml for preschool children over 12 months of age, followed by a glass or two of water (ipecac does not work as efficiently on an empty stomach). If no vomiting occurs in 20-30 minutes, one more dose of 15 ml can be administered. *Never give a third dose*. For bigger people, the dose is 30 ml, given no more than twice per encounter, followed by water. For children under one year of age, ipecac, when indicated, should not be given at home; in this age group the emetic should be given in the E.R. and the dose is 10 ml, one time only, followed by a glass of water. The danger of aspiration is greater in the child under one year and observation following ipecac should be done by professionals. It is well to bear in mind that the emesis following ipecac does not usually extend beyond two hours. Therefore, emesis beyond this two hours is presumably not due to the emetic but to something else and proper attention must be paid. Also, it is considered generally safe to give a child liquids to drink after the two hours has passed provided the child's clinical condition is good. More good news for the poisoned child: ipecac can be followed by carbonated beverages instead of water and this might be more acceptable to some children (Sprite, 7 Up, etc. are preferable). Milk should not be used as it decreases the local action of ipecac on the gastric mucosa and may slow the absorption of the emetic, thus decreasing its central effect on the chemoreceptor trigger zone.

And now for the main point of this exercise: what to do and what not to do when an emetic is indicated and ipecac is not available in the home. It is easier to talk about what not to do. *Salt water should never be used as an emetic*. As I go through the state, talking about poisons, I am amazed at how many health care professionals still feel that salt water is a viable alternative to ipecac. Hypernatremia is bad news; do not make a poisoned patient sicker by adding a salt burden that can wreak havoc on the CNS. One tablespoon of salt (about 230 mEq sodium) in a glass of water, if retained and absorbed, can raise the serum sodium level 25 mEq/l in a three-year-old child. A dilute solution of *copper sulfate* has been used as an emetic (probably more popular in Europe) but it has both hemolytic and hepatotoxic properties and does not belong in this enlightened part of the 20th century. *Mechanical stimulation* of the posterior pharynx is really not that efficient and does not have a lot to recommend it — can be dangerous as well, e.g., laceration of the mucosa by fingernail or severe bite or loss of digit by an angry two-year-old poison victim. *Raw eggs* as an emetic are also not very efficient in terms of the poisoned child, but could make some of their parents vomit, I would guess. *Mustard, dried mustard* or *mustard powder* are relics of the past and are not very efficient emetics anyway.

Is there, in fact, any reasonable alternative to ipecac syrup as an emetic in the home, when emesis is indicated and time is a critical factor? Yea, I say unto you, there is! . . . *household liquid detergents*. Now, caution is needed here if you're going to dispense this advice over the phone. We are speaking only of a selective group of liquid detergents — essentially those usually advertised as being "gentle to your hands," e.g., Ivory Liquid, Palmolive Liquid,

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Dove Liquid, Dawn Liquid. This does not include laundry detergents or electric dishwashing detergents — these groups are contraindicated as emetics. The liquid dishwashing detergents can be used as emetics, I believe, under the following guidelines:

1) emesis is indicated in a potentially poisoned patient;
2) no contraindications to emesis are present, e.g., coma, ingestion of caustic, etc.;
3) the patient is more than 12 months of age;
4) access to syrup of ipecac is not possible within a reasonable time frame;
5) use only the type of liquid dishwashing detergent mentioned.

The recommended emetic dose is 3 tablespoons of the liquid detergent in 8 ounces of water. I would imagine that this would produce enough suds to wash Cleveland and probably a lesser amount of detergent could still do the job. This stuff tastes awful but it works; studies show that it is a very efficient emetic that acts rapidly.[1-3]

Away, I say, with the methods of emesis induction used in our past; if syrup of ipecac is not available when you need it, use a liquid dishwashing detergent under the guidelines suggested — until something better comes along. The least your patient will get out of all of this is a "clean" stomach.

Another myth that needs to be destroyed for those purveyors of toxicology advice by telephone is the myth of dilution of the ingested toxin by large quantities of water. This method is still being recommended in some first aid hand-outs and some toxicology texts. At the present time, this method is not considered to be wise or efficacious in the emergency management of ingested systemic toxins. In point of fact, there are studies that show that dilution with water may result in an increased plasma concentration of certain drugs such as pentobarbital, quinine and sodium salicylate and also may increase the dissolution rate of tablets or capsules. The American Association of Poison Control Centers, in a recent policy statement, recommends that oral dilution with water *should not* be used as a general first aid measure to treat ingestions involving drugs. I always say that if you can't afford a food and drug taster for your family, don't bother.

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Features for Patients

Practicing physicians and others in North Carolina interested in medical care are encouraged to write articles that will be useful to patients and to the many persons who work with doctors and hospitals. We are urging doctors to make the Journal available in their waiting rooms. Letters from all readers will be of interest to the editor and, when appropriate, will be published in the next available issue of the Journal.

Understanding Your Health Insurance Benefits

James A. Brady, Jr.

Today we are all aware of the rising costs of health care and the necessity of having health insurance. The majority of today's health insurance coverage is group coverage purchased by employers directly or through payroll deduction programs for their employees. Health insurance employee benefit programs are the mainstay of most employee benefit programs and yet are probably the least understood by the employee. What kind of health insurance coverage do you have? What services are covered and to what extent are they covered? This article is intended to give you a brief and understandable description of some of the most common types of health insurance coverages.

From Blue Cross-Blue Shield of North Carolina, Durham, NC.

Basic Hospital Benefits

Inpatient hospital benefit coverage is the most expensive part of most health insurance benefit programs. It is designed to provide benefits for covered services that a patient receives while in the hospital. These benefits are usually divided into two categories: daily room and board and ancillary services.

Daily room and board benefits cover charges for the hospital room, meals and general nursing care provided by hospital employees. The highest level of benefits (thus the most expensive) are designed as paid-in-full benefits for semiprivate rooms and wards; for patients with a private room accommodation, they will pay the most prevalent semiprivate room charges.

Another level of daily room and board coverage, which is more limited, will provide benefits at a specific dollar amount ($50, $75, $100, etc.) each day a patient is in the hospital. Each level of room and board benefits has limits as to the number of days the benefit will be paid. These limits vary with the contracts from 30 days to 365 days; most basic coverages cover 90 to 120 days.

Ancillary benefits are designed to cover other medically necessary in-

"What kind of health insurance coverage do you have?"

patient hospital services, such as intensive and cardiac nursing care, drugs, radiology services, laboratory services, physical therapy, etc. These benefits may be very comprehensive and paid in full; limited to an amount equal to a multiple of the room and board benefit allowance; or limited to a specific dollar amount ($1500-$2000) per hospital confinement.

Outpatient Benefits

Outpatient benefits are designed to pay a percent of the reasonable charges for covered services furnished in the outpatient department of a hospital or in a doctor's office. Hospital and doctor's services are usually covered at 100 percent of reasonable charges for accidents, medical emergencies, outpatient surgery, radiation therapy, chemotherapy, and pathological examinations. Diagnostic tests and procedures such as x-rays and clinical laboratory tests are covered at 80 percent of reasonable charges. Outpatient benefits for accidental injury and medical emergency services are usually limited to care initiated within a certain period of time such as five days for accidents and 24 hours for medical emergencies.

Basic Surgical Benefits

Basic surgical benefits are designed to pay some or all of the reasonable charges made by the operating doctor for covered services. These are professional benefits paid to the doctor without regard to where the surgery is provided. Surgery is usually provided in a hospital — either inpatient or outpatient — or a free standing ambulatory surgical facility or the doctor's office. Surgical benefits include preoperative services, the operation, and usual followup care provided by the doctor or his staff. Surgical benefits are provided for the operating surgeon's services, the assistant surgeon's services, and the anesthesialogist's services for general anesthesia.

Surgical benefits for physicians' services are generally determined by one of three methods.

- A scheduled allowance paying a dollar amount for each unit of value assigned to a specific surgical procedure. As an example, an appendectomy has a relative value of 40 units. If a patient has an $8 indemnity scheduled surgical benefit, the allowance for an appendectomy would be $320 (40 units × $8). Information provided to policy holders and members usually includes a sample listing of surgical procedures and allowances. Benefit allowances for other procedures can be obtained from the insurance company or in some instances the employer.
- A scheduled allowance paying a specific dollar amount for each surgical procedure as indicated in the policy. The scheduled amount varies based on the complexity of the surgical procedure and the level of coverage.
- A benefit allowance based on usual, customary and reasonable (UCR) charges. The *usual* charge is the fee charged by a particular doctor for a particular service. *Customary* is the normal range of charges by most doctors of similar training in similar practice for similar services. A *reasonable* charge is usual and within the customary range of charges for a complex or unusual service. For administrative purposes, insurance companies establish a maximum customary allowance for a standard service. The maximum customary allow-

"What benefits are covered and to what extent are they covered?"

ance is usually established at an amount that will cover 90 percent of all charges for an individual service. The maximum allowances are not published. All charges for covered services that are less than or equal to the maximum allowance are paid in full or at the contracted percentage. UCR coverage increases allowances as the cost of medical and surgical services increase; it keeps the patient's coverage up to date and reduces costly benefit upgrading changes for the group. To realize these advantages it must be remembered that UCR lends itself to more frequent rate increases.

Basic Inpatient Medical Benefits

Inpatient medical benefits are usually provided for services by the attending doctor to a patient admitted to a hospital for other than surgical care. Many coverages describe inpatient medical benefits as "doctor visits" with a limit of one visit per day. These benefits may also include coverage for newborn care and for consultations by other doctors.

General group contracts provide the same type of inpatient medical benefit coverage as is provided in the basic surgical coverage.

- A scheduled benefit for each day of hospitalization. If the patient has an $8 medical benefit, benefits will be provided on the basis of $24 for the first day of hospitalization, $16 for the second day, $8 for the third day and each day thereafter. These professional benefits are frequently doubled for intensive care treatment.
- A scheduled allowance of a specific dollar amount for each day of hospitalization, i.e., $10 per day. This benefit may also be doubled for intensive care.
- A per diem benefit allowance based on usual, customary, and reasonable charges for the specific level of services actually provided, i.e., daily care allowances based on daily care charges and intensive care allowances based on intensive care charges.

Supplemental Benefits

Supplemental coverages are provided as a supplement to, but do not replace, basic coverages as described above. The coverage is intended to provide the patient with extra protection needed because of serious, lengthy, or costly sickness or accident. Some supplemental benefits may be provided only for services for which there has been a previous hospitalization. However, most supplemental coverages are designed to provide benefits for services rendered in a hospital that are not provided by basic coverages as well as expenses incurred before or after hospitalization, or even when hospital care is not required.

Supplemental coverages may extend basic benefit limitations by adding more hospital days of coverage and increasing benefit lifetime limits to $250,000 or $1,000,000.

Usually supplemental benefits are limited to 80 percent of reasonable charges after a deductible (usually $100).

These types of coverages provide benefits for such services as private duty nursing, prescription drugs, licensed ambulance service, durable medical equipment, speech therapy and outpatient psychiatric care. In order for these services to be covered they must be ordered, prescribed or provided by eligible doctors and, in most cases, specifically justified as to medical necessity by the doctor.

Comprehensive Major Medical Coverage

The wisdom of providing 100 percent coverage for other than relatively minor outpatient services has been questioned on the basis that these coverages increase demand for medical care, and the manpower and means of providing care have marked limitations. When the patient is relieved of any cost involvement, the demand for care is accelerated, and when the payment comes from an impersonal large third party, charge limitation based on patients' economic circumstances and personal or family hardships need not be taken into consideration. The increase in the number of patients with health care coverage (estimated to be approximately 90 percent of the U.S. population), whether from insurance companies or through government programs, has contributed to the escalation of health care costs. With rapidly increasing health care costs and corresponding increases in the overall costs of employee benefit programs, industry is looking for ways to reduce costs and still provide health care coverage for its employees. One of the ways identified to reduce benefit costs is to convert to Comprehensive Major Medical Benefit Programs.

Comprehensive Major Medical Coverage usually removes first dollar basic benefit coverage while continuing to protect the patient from large hospital and doctor bills as a result of extended or catastrophic illness. These Major Medical Coverages provide broad ranges of benefits with a few limitations after the patient has paid the deductible.

Although deductibles in the programs vary from $150 to $1000, the usual comprehensive program will require a $200 out-of-pocket expense per year before coverage is available. After meeting the deductible, benefits are usually provided at 80 percent of reasonable hospital, doctor, lab, x-ray or other charges with a 20 percent coinsurance. The patient's total out-of-pocket expense is usually limited to approximately $700, after which time the coverage becomes 100 percent of reasonable charges without the coinsurance requirement for covered services.

Many of these Comprehensive Major Medical Programs offer cost containment incentives for the patient. The cost containment incentives may provide for no deductible and/or 100 percent benefit for outpatient surgery, pre-admission certification,

admission to specific hospitals, or pre-admission testing.

As an example of how these cost containment incentives may appear in a comprehensive Major Medical Program, benefits might be paid at 100 percent of the reasonable charges without deductible for accident care, medical emergencies, and diagnostic testing and surgery performed on an *out-of-hospital* basis, whereas the charges for the same services provided on an *in-hospital* basis might be reimbursed at 80 percent of the reasonable charges after a deductible. This gives the patient an incentive to request that services be provided on an out-of-hospital basis in order to save the deductible and 20 percent of the charges out-of-packet.

In some coverages precertification of hospital admissions is chosen as a cost containment optional benefit. Precertification means that all elective (non-emergency/non-maternity) admissions for hospitalization must be reviewed and approved for benefits by either the insurance carrier or the employer to ascertain the medical necessity for the admission before the patient is admitted to the hospital. If an acute hospital setting is not medically necessary, outpatient alternatives are suggested. Under these programs no benefits are provided for elective admissions that have not been precertified before admission.

Laser Therapy for Diseases of the Eye

M. Bruce Shields, M.D., W. Banks Anderson, Jr., M.D., and James S. Tiedeman, M.D., Ph.D.

Ophthalmologists have used light to treat diseases of the eye for several decades. We are all familiar with the potential energy of light from our experience with the sun. If we gaze directly at the sun, even for a short period of time, the focused rays will create a local burn in our retina, leading to loss of vision. The same type of light energy, however, can also be used to prevent blindness if the rays are directed toward certain portions of the eye. This form of therapy is called photocoagulation.

The first photocoagulator actually used the sun as the energy source, focusing the light into the eye through a series of lenses. This system had obvious practical limitations, and was soon replaced by an electrically powered energy source, the xenon arc bulb. While the xenon arc photocoagulator is still used today, it has been largely replaced over the past decade by a much more powerful and versatile light source: the laser.

A laser (light amplification by stimulated emission of radiation) is a tube containing a gas or crystal. A current of electrons passes across the tube, increasing in energy as it bounces between mirrors at either end of the tube. The result is a light source that not only has incredible energy (greater than that of the sun's rays), but can also be focused to a very fine point.

The properties of high energy levels and critical focusing capability have made the laser an ideal light source for the treatment of eye diseases. The light can be made to pass safely through clear structures of the eye, such as the cornea and lens, and to create tissue alterations within the eye at the point of focus. With most lasers, the tissue alteration results from a burn created by the absorption of light energy by pigmented structures. With some of the newer lasers, however, tissue alteration results from the impact of the light at the focal point, allowing treatment of structures that are not pigmented.

Laser therapy, then, is a form of surgery in the sense that tissues are physically altered to correct a disease state. In essence, the surgeon has replaced his knife with a light. In some diseases of the eye, laser photocoagulation produces a favorable outcome which cannot be achieved by conventional surgery, as with some diseases of the retina. In other situations, as with certain forms of glaucoma and cataracts, laser therapy provides a way of obtaining results previously achieved with more difficulty by conventional surgery. In all cases, laser photocoagulation has a distinct advantage over conventional surgery in that the eye need not be entered, other than by a ray of light, which greatly reduces the potential for surgical complications. In addition, laser surgery is usually performed on an outpatient basis, produces very little pain, requires minimal anesthesia, reduces the time required for post-therapy recovery, and significantly reduces the cost of treatment.

At the present time, there are two categories of eye disease in which laser photocoagulation is commonly used: retinal diseases and glaucoma. In addition, there is preliminary experience with laser therapy for some forms of cataracts, which may become a third important category of laser treatment for diseases of the eye. In this article, we will review laser photocoagulation of retinal diseases, glaucoma, and cataracts, with emphasis on basic aspects of interest to all physicians and their patients.

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Retinal Diseases

The retina is the light sensitive part of the eye on which light images are formed much like the film in a camera; and retinal diseases are a frequent cause of visual loss. Macular degeneration is the leading cause of new blindness in the over 65-year-old population in the United States. Although the disease is sometimes referred to as "senile macular degeneration," its presence does not imply the mental changes of senility. Neither is it associated with "hardening of the arteries" in eyes with poor circulation. Rather it appears that macular degeneration occurs because of a hereditary predisposition that can lead to visual loss in a variety of ways. The hallmark of macular degeneration is the presence of drusen or crystal-like bodies immediately behind the retina of the eye. These drusen are visible to the ophthalmologist upon inspection of the internal eye with an ophthalmoscope. Drusen themselves cause little or no visual impairment, but their number and size do seem to correlate with later visual loss.

The most profound visual impairment in macular degeneration comes about when abnormal new blood vessels form under the retina (a subretinal neovascular membrane or SRNVM). This membrane may leak clear fluid into the subretinal space causing a distortion of the retina and consequently a distortion of the image that is seen. Straight lines may become bowed and blurred. Sometimes the SRNVM that leads to these events can be seen with the ophthalmoscope, but frequently a fluorescein angiogram must be done to be sure of its presence and location. A fluorescein angiogram is a series of photographs made after injection of fluorescein dye into a vein in the arm. If the angiogram shows that these vessels are located away from the very center of vision, the laser has been shown to be effective in many cases in preserving or improving vision. Unfortunately, in many cases no treatment is possible because the neovascular membrane is located so centrally that the treatment would cause more loss of vision than improvement. The cases most likely to benefit from laser treatment are those in which symptoms are of recent onset (a few days or a week) and vision is still relatively good.

Diabetes mellitus can have many effects on the eyes that lead to a loss of vision, and its complications are the leading cause of new blindness in the 20 to 65-year-old population in the United States. The laser has had remarkable success in preventing some of the most dreaded eye complications of this disease. Vision may be lost when abnormal new blood vessels, or neovascularization, proliferate from the retina into the normally clear vitreous cavity of the eye. These new vessels can break, causing hemorrhage, or can lead to retinal detachment from the formation of scar tissue. The laser cannot reattach the retina or eliminate the hemorrhage but it is effective in stopping or even reversing the growth of neovascularization. The laser beam is applied in a "panretinal" fashion in which the peripheral retina is treated. Just why this is beneficial seems to be related to an improvement in the relative oxygen supply and the needs of the retinal tissues. The retina of diabetics may be severely underoxygenated because of vascular changes, similar to those occurring elsewhere in the body.

Diabetes may also cause a visual loss by changes in blood vessel permeability. The vessels may leak serous components of blood and cause edema or excess tissue fluid in the retina. If this leakage is limited to discrete areas, the laser may be used to seal the abnormal vessels.

Other retinal conditions in which the laser is of established value include occlusion of retinal veins and some retinal tumors.

Laser treatment of retinal problems may be carried out in most cases with only a drop of a topical anesthetic. In some special situations, an injection of local anesthetic may be advisable to keep the eye absolutely still or when extensive treatment might be uncomfortable. Treatment for macular degeneration usually takes less than 15 minutes, while a full panretinal treatment for diabetes may take over an hour and may be divided into two or more sessions. Treatment is usually done on an outpatient basis, and the patient can go home immediately after treatment, without any significant discomfort.

Glaucoma

Glaucoma is not a single disease, but rather a group of disorders that are characterized by a high pressure within the eye that eventually destroys the optic nerve. The destruction, or atrophy, of the nerve leads to irreversible loss of vision. The various forms of glaucoma differ according to the initial factor that causes the pressure elevation, and all forms of glaucoma are treated by reducing the pressure elevation. If the pressure is controlled before significant nerve damage has occurred, blindness can be prevented. Since there are different factors which cause the initial pressure rise within the eye, different forms of treatment must be used to appropriately control the various types of glaucoma.

The most common form of glaucoma is referred to as chronic open-angle glaucoma. This type of glaucoma causes no pain or other symptoms in the early stages. It may be present for many years before the patient realizes he is going blind, since the early loss of vision occurs in the peripheral field of vision. The incidence of this glaucoma increases with age and is also more common in individuals who are highly nearsighted, have diabetes, or have a family history of glaucoma. It is primarily for this type of glaucoma that periodic examinations are required to detect the glaucoma in an early stage.

Once open-angle glaucoma has been detected, the initial treatment is usually with medication. These drugs

"In essence, the surgeon has replaced his knife with a light."

include several forms of eye drops, as well as pills. In some cases, however, even a combination of these medicines in their highest concentration will no longer control the glaucoma. Prior to the advent of laser therapy, the next step in treating these cases was surgery. With the laser, we now have an intermediate step between medicine and surgery which can eliminate the need for surgery in many cases.

As with most other forms of laser therapy, the treatment of open-angle glaucoma with laser photocoagulation is performed on an out-patient basis. An argon laser is used, and the procedure is called argon laser trabeculoplasty. The patient sits in front of a slit-lamp similar to that used for a routine examination in the ophthalmologist's office. The cornea is anesthetized with an eye drop and a contact lens is then placed on the eye. The laser beam is directed through the contact lens into the portion of the eye called the trabecular meshwork, through which the aqueous humor leaves the eye. The result is a tissue alteration which increases the rate of fluid outflow, thereby lowering the intraocular pressure.

The actual procedure of argon laser trabeculoplasty usually takes less than ten minutes. However, the patient should plan to be in the treatment area several hours for examinations before and after the therapy. In most cases, the surgeon will perform the treatment for each eye in two stages, separated by several weeks. Two or more visits to the surgeon, therefore, are generally required to complete the therapy.

The intraocular pressure usually does not come down immediately after laser trabeculoplasty. In fact, it may rise during the first twenty-four hours, and the pressure must be observed closely during this time. It may take up to a month after completion of therapy to see the final result of the treatment. During this time, the patient is advised to continue all previous medication. It should also be noted that laser trabeculoplasty does not usually eliminate the need for medical therapy, although it can sometimes be reduced after the laser procedure. In approximately 80% of the cases, however, laser trabeculoplasty will eliminate the need for surgery. In those cases where it is not successful, conventional surgery for glaucoma must be performed.

It is very important to emphasize that argon laser trabeculoplasty does not replace medical therapy. Although it is a relatively safe procedure, it has only been used for a few years, and we do not know what the long-term effects may be. Therefore, it should not be used in a person whose open-angle glaucoma is well controlled with medical therapy.

Another type of glaucoma is referred to as angle-closure glaucoma or acute glaucoma. Clinically, this is just the opposite of the open-angle glaucoma in that it comes on suddenly with severe pain, redness, and decreased vision. If it is not treated promptly, irreversible loss of vision can occur within a matter of days. Emergency medical therapy must be used to bring the pressure under control. Unlike open-angle glaucoma, however, surgical intervention is required once the pressure has been medically controlled.

The surgical technique for angle-closure glaucoma is referred to as iridectomy and involves the creation of a hole in the iris. This results in re-establishment of normal flow of aqueous humor within the eye, preventing future attacks of angle-closure glaucoma. Prior to the use of laser therapy, the iridectomy was performed surgically by entering the eye and cutting the hole in the iris with scissors. It is now possible to create the same opening in the iris with laser burns. Since a laser iridectomy has the advantages of greater safety, shorter recovery time, and reduced treatment cost, it has nearly completely replaced surgical iridectomies.

Since angle-closure glaucoma is often an emergency situation, the time requirement for the patient may be different than that with laser therapy for open-angle glaucoma. Not infrequently, the patient will be admitted to the hospital for intensive medical therapy prior to the laser iridectomy. The surgeon may then wish to keep the patient in the hospital another day for close observation. However, there are other situations, especially if the condition is detected prior to an acute attack, when the entire procedure may be performed on an out-patient basis.

Once a successful iridectomy has been performed, it may be possible to eliminate the use of all medication, although some patients will require the chronic use of variable amounts of eye drops or pills. In all cases, the patient must continue to be followed on a periodic basis by his ophthalmologist.

Many other forms of laser therapy have also been developed for less common forms of glaucoma, such as that following cataract surgery or glaucoma associated with diabetes of the retina (neovascular glaucoma). There is no doubt that additional forms of laser photocoagulation will be applied to the treatment of other forms of glaucoma, as this important

field of medicine continues to expand.

Cataracts

The laser has never been used to remove a human cataract — no matter what the magazines say. It is, however, finding increasing utility in the management of cataract patients both pre- and post-operatively. Neodymium-Yttrium-Aluminum-Garnet (YAG) lasers can instantaneously deliver so much energy into such a tiny area that they can "explode" even very transparent body tissues. In extracapsular cataract surgery, where the cataract is broken up inside of the eye and removed in pieces, the YAG laser is used to blow holes in the anterior lens capsule before the operation or more commonly in the posterior lens capsule after the operation. When the posterior capsule is left intact to stabilize an intraocular lens, it may opacify after a number of months or years. It is then usually necessary to make a surgical opening in this membrane with a needle-knife if vision is to be restored. The YAG laser converts this intraocular surgical procedure to one requiring no ocular opening, no anesthetic, and only a few moments of time.

Some European surgeons have used this laser to open the anterior capsule the day before the scheduled surgery. This allows ocular fluid to percolate into the body of the lens softening it and making aspiration easier the next day. These techniques are still experimental.

NOTE: The editor pushed the authors to define the areas in North Carolina where these procedures were done and to say a word about costs. The authors declined saying that the field was in a state of flux and that they could not comment on costs other than to say there was considerable variation.

Accidental Use of Superglue in the Eye

J. Kemper Campbell, M.D.*

The hazards of mistaking similarly packaged ophthalmic drugs have been previously reported.[1, 2] Similar confusion with a nonophthalmic compound is now described.

Case Report

A 35-year-old man was working outdoors April 24, 1982, when his eyes began to itch. He found a bottle of what he believed were his wife's eyedrops on the windowsill. Immediately upon placing one drop into his right eye, he experienced the onset of severe pain in the eye and an inability to open his eyelids. Inspection of the bottle revealed that he had mistakenly instilled Superglue into the eye.

He was taken to the local emergency room where the examining physician was unable to visualize the cornea because of the firm lid adhesion present.

He was seen at the St. Elizabeth Community Health Center emergency room approximately three hours after his initial injury. His right lids and lashes were firmly bonded together by the adhesive. Under magnification, surgical scissors were used to carefully separate his lids and remove all lashes.

As soon as the lids separated, a gush of tears and debris which had been trapped behind the lids exited. A large central corneal abrasion was then noted. A clump of dehisced corneal epithelium and Superglue was present in the inferior conjunctival fornix.

Pressure patching, topical antibiotics, and cycloplegic drops healed the abrasion, though the patient continued to be quite uncomfortable for the next 72 hours.

When last seen May 6, 1982, the patient again had 20/20 corrected vision acuity and his cornea was completely clear.

Discussion

Superglue is a commonly used adhesive compound which is found in many households. Various nonprescription eyedrops are packaged in similarly sized and shaped bottles which can potentially be confused with Superglue.

As physicians we should be aware of potential environmental hazards to our patients, and if we do occasionally recommend eyedrops which can be purchased over the counter, we should emphasize that the proper place for these drops is the medicine cabinet.

It is also our responsibility to alert the manufacturers of this possible confusion with their product so that a simple change in packaging (i.e. using a red label) may be considered to prevent further accidents of this type.

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No Panacea for Acne

Claude S. Burton, M.D., Peter W. Heald, M.D., and J. Lamar Callaway, M.D.

The public was saturated with media coverage when Hoffman La Roche sent Isotretinoin (Accutane) to pharmacies in North Carolina last September for the treatment of acne. Was this to be the panacea for this common affliction? Was it a death knell for dermatologists? Hardly, but Isotretinoin (Accutane) has found a select role in the overall approach to acne and as such is bringing new business to dermatology.

We are not talking just about adolescent acne. Acne can occur much later in life than the teens, much to the dismay of patients with acne rosacea or acne secondary to long-standing sun damage. It also may appear in the form of peri-oral dermatitis or peri-oral acne which afflicts women of all ages.

The physician dispenses the most important elements in acne management: a blend of concern and preventative medicine. By eliminating predisposing factors, modifying lifestyle, and being reassured by the physician, a patient can have longer lasting results than any salve with inflated hopes riding on it. As other natural processes wax and wane, so will the course of acne. Summer sunshine (a natural adjunct to acne therapy) certainly contributes to this, as does the menstrual cycling of women. It is important for patients to recognize this and to know how to deal with it. Predictable stresses that flare acne need to be recognized and treatments need to be begun a bit more rigorously. To stave off more anxiety it is also helpful to know that there is always help available should the current regimen fail. Acne therapy can be that successful.

Chocolate and milk products are not incriminated as causes of acne as they were in the past. "B" vitamins, iodinated medications, Isoniazid, and Dilantin, however, may exacerbate and even produce acne, warranting a switch away from these substances. There are topical troublemakers also. Oil on the skin, whether produced by naturally oily skin, Oil of Olay, or aerosolized particles at a fast food restaurant, can initiate the sequence leading to acne eruptions. This is especially important in patients using vaseline, whether it be on the hair, face, or hands. Another topical problem is applied pressure. Chin straps, the chin-in-hand position, and shoulder straps all contribute to the acne problem.

Despite taking precautions, many patients will require prescriptions to improve. Every patient will require some type of drying agent. Benzoyl Peroxide from 2.5% to 10% and Retin A from .01% to .1% serve this function. Both are best applied in small amounts 15 to 20 minutes after the skin has been washed. Concentrations can be slowly increased using rashes or sloughing off of skin as clinical guideposts. Since Retin A is considerably more expensive and more fraught with side effects, it is best given under the care of a skilled dermatologist for satisfactory results. The average monthly cost of the Benzoyl Peroxide is approximately $6, whereas Retin A is upwards of $13. Benzoyl Peroxide is now available without a prescription.

The next step in therapy is an antibiotic. Of oral preparations, Tetracycline leads the way as the time-honored and economically feasible choice. Long-term therapy appears quite free of deleterious effects. The average cost is approximately the same as Benzoyl Peroxide. Tetracycline must be taken one hour before or two hours after eating for proper absorption; this restriction is too prohibitive for many patients. Erythromycin therapy is slightly more expensive, costing $10 a month. With both these antibiotics, the patient must be alert to untoward reaction, photosensitivity, and recurrent vaginal candidiasis.

For those unwilling or unable to take oral antibiotics there are now alternatives. Both Tetracycline and Erythromycin now come in a variety of topical preparations which cost approximately $9 to $12 for a month's treatment. These products frequently contain alcohol to solubilize the antibiotics, and as such may burn and irritate slightly. Some are compounded in creams such as the Meclan preparation of Tetracycline. Clindamycin (Cleocin-T) has appeared as a useful topical antibiotic essentially devoid of gastraintestinal side effects which interfere with its use by mouth.

Isotretinoin (Accutane), a vitamin A analogue taken by mouth, is now the most effective therapy for cystic acne, the most destructive form of the affliction. The cost of the average 16- to 20-week course including the suggested monitoring of lipids, liver function, and blood counts will run $1,000 to $1,500. With the potential for sustained remission following therapy, this apparent enormous price must be weighed against the costs of chronic "less expensive" treatment. Not only is therapy expensive, it is fraught with side effects in virtually all patients. (The common side effects are fissures at the angles of the lips, conjunctivitis, facial dermatitis, dryness, thinning of the hair, and arthralgias.) And, as with any new medication, until experience accumulates with items like increased fat in the blood, there exists the potential for unexpected deleterious effects. For these reasons, Isotretinoin (Accutane) is currently not recommended for milder cases.

Considering both the patient and the disease, each case is unique. The physician must evaluate both and decide on a course of therapy. Such is the art of medicine.

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The Female Medical Student in the 30's

Eleanor B. Easley, M.D.

IN the Duke Medical School freshman entering class of 1930, for most of the time, there were only two women: Julia Mary Jones and me. Julia Mary now has been dead for several years. She and I were good friends but neither of us became close to the few women transfers who came and stayed briefly — or to the one woman in the junior entering class ahead of us — or to the very few women in the next few classes that followed ours. How these women felt or fared, I have no idea.

For anyone accustomed to Duke Medical Center as it exists today, what the parent institution was like in 1930 is nearly unbelievable. The small physical plant seemed like just another one of the West Campus departments and closer to the rest of Duke University than it is today.

The small original faculty I remember as uniquely excellent. Many of them were the relatively young department heads who'd been hand-picked by Dean Davison. We students were lucky to have had most of our lectures given by these excellent teachers. The prevailing atmosphere was informal and comfortable. Within weeks the faculty knew us students as individuals and by name.

The Anatomy Department was particularly friendly. Elizabeth Swett, wife of the department head, Dr. Frank Swett, was like a house mother to the Freshman Class. She helped full time to administer the department and her troubleshooting for students fitted in naturally. But the other departments were friendly also. They all went out of their way to be good to us. They had parties for us at Christmas and they invited us to dinner. The latter kind gesture invariably terrified me. I was plagued with insecurities, partly from having grown up in the depression. My background had been meager, and I was trying to hide it. One dreadful time — I cringe to remember it even fifty years later — we arrived a day late for dinner with a professor. My only alibi was that the foreign accent of his wife, who had phoned, was difficult to understand.

There were two entering classes of 1930, a junior entering class of 18 and our freshman entering class. Rumor had it that our 50 students had been selected from 500 applicants. We used to look at each other and wonder how our particular odd assortment had been chosen. Most of us were in our twenties but there were three teenagers, one of whom had finished only two years of college; and there was one very bright man who must have been somewhere near thirty. We were from many different states and backgrounds. We had no blacks, orientals or foreign students, but we did have several Jewish students who mixed in with everyone else and didn't seem at all like a minority.

The class soon divided into smaller groups of friends, but this didn't interfere with the harmony of the group as a whole. Several students had a hard time keeping up and some apparently decided that they'd made the wrong vocational choice. At any rate, there were a number of early dropouts — among them one of the three women who had started with the class. We were all oriented toward medical practice, not toward academic medicine. Mr. Duke's wish to provide doctors for the South was then a potent influence.

The admission of women to the medical school was probably one of the deliberate innovative policies of the young Duke medical enterprise. Some medical schools — notably Harvard — wouldn't take women at all. We were treated wonderfully well by the faculty and within our own class. Indeed, we melted into the group so well that sometimes everyone seemed to forget about our being female. That happened one day in a big Saturday Urology Amphitheatre Clinic. The problem presented was: You have three minutes to catch a train and you go into the men's room to urinate. You find a man already standing in front of each of the three urinals. One man has prostatic hypertrophy. Another has a stricture. I've forgotten what ailed the third man but it was something sure to slow down his voiding. "Which man would you stand behind," demanded Doctor Alyea. After looking up and down for a victim, he pointed at me. I was so flustered, I can't remember what I said. Almost certainly I didn't know the answer. I was too practical to waste my time studying male urology. Some wag put out the apocryphal rumor that my answer was — I'd run for the train.

Our good treatment by faculty and friends was in sharp contrast to the behavior of many of the house staff and some of the male students who didn't know us well. A number of them acted as if they wished we'd get lost, permanently. One Harvard-trained assistant resident's regular greeting was, "I'm an ultra persimmon to'rd medical women." In 1930 their attitude was the prevailing one. Women in medicine were regarded with suspicion. They were tolerated, usually politely — sort of like chiropractors nowadays — then avoided if possible. Inside the hospital and outside it was much the same. Julia Mary and I soon became so accustomed to jibes and innuendos that we scarcely noticed them.

Only once did I encounter an obstacle which threatened

From the Durham Women's Clinic, 1821 Green Street, Durham, NC 27705.

to be serious. When I applied for an internship, the professor of medicine told me bluntly, "I will accept no women and no married students." When I sought a letter of recommendation to go elsewhere from Dr. D. T. Smith, he interceded and managed to get me accepted to Duke. It is interesting that later Doctor Smith's daughter, his only child, became a successful physician.

Considering the unfavorable climate, why did we women persist? I don't know the answer for Julia Jones, even though we were good friends. Besides femaleness we had in common being unbeautiful, quite a bit smarter than the class average, and hard workers. There the resemblance ended. Julia was affluent, assured, accustomed to a good life and being accepted. She was not a man's woman. She never did marry, and I'd been married two years when I entered medical school. Being married sort of insulated me, I think, but made me more accepted by the men. They could be sure I had no designs on them. Julia's decision to study medicine surely must have been rational and planned, whereas I had blundered in by pure accident. But once having got a toe in the door, I had become fascinated. I knew how lucky I was to have been admitted to Duke Medical School, and I'd have put up with almost any kind of treatment to be allowed to continue with a medical education.

I had started out in psychology. That was my husband's field and he was a graduate student when we married. Then, as now, graduate students had little money. We lived in a small, shabby apartment. With nothing else to occupy my time, I too went to graduate school.

The second year my major professor decided I should have a minor in physiology. At Vanderbilt Medical School, where he sent me, the Admissions Committee turned me down several times before giving up and entering me as a special student in the freshman anatomy class. Thereafter chance, good luck, and a tolerant husband took care of me. It was pure luck that my husband got his first post-doctoral job at Duke and that the same year, Dr. Frank Swett, who had taught that Vanderbilt anatomy class, moved to Duke as Professor and Chairman. He personally engineered my admission to Duke Medical School.

For several decades, I've been seeing wives work to put their husbands through medical school. My husband put *me* through. What's more, he put up with me, with my being gone and working much of the time. He ran interference for me with our skeptical friends who kept asking, "When are you going to quit this foolishness and settle down?" "Let my wife be," he told them. "I'm buying her a gold wash board and she's going to support me in the manner to which I intend to become accustomed!" But no one, not even he, anticipated my becoming a busy and successful doctor.

One more time chance determined my future. My quick success and probably that of many other women doctors was a direct result of World War II. During 1942, about half our male doctors went into military service and suddenly there was a civilian doctor shortage. At the same time, my husband went into the Navy, leaving me with plenty of time to do whatever work I could find. I found too much! All the patients who had initially regarded me with suspicion or disdain were glad to have me around. By the end of the war, I was downright popular.

Chance had favored the trained mind even though it belonged to a female person. Those of us who were privileged to enter medicine's main stream — albeit due to those undesirable circumstances — like to think that our effective performance may have been one factor in promoting today's nearly unqualified acceptance of women in medicine.

Learning without Work

A Look at the Stool Can Save a Barium Study

Cynthia Mulrow, M.D., G. Ralph Corey, M.D., and J. Trig Brown, M.D.

Giardia Lamblia[1-5] is an intestinal flagellate protozoan that can produce asymptomatic infection or cause an enteritis with symptoms ranging from acute diarrhea to chronic malabsorption. It is an important cause of diarrhea particularly in high-risk populations such as those visiting mountain or wilderness areas where they may be exposed to the parasite by ingesting contaminated water.

Case Report

A 40-year-old white man who had been well developed sluggishness without other specific complaints. While vacationing in Pennsylvania three to four days later, he experienced acute onset of diarrhea after eating a large meal of Hungarian goulash. There was no blood or mucus in his stool nor did he have any nausea, vomiting or fever. The diarrhea resolved over several days but the patient continued to feel weak. After five days, his diarrhea returned and he took paregoric and gradually improved. One week later he had a third bout of diarrhea and underwent an upper gastrointestinal series with small bowel follow through which showed mucosal edema and flocculation of the barium in the small bowel (figure 1). The diarrhea gradually resolved again only to return a fourth time.

The patient presented to us for evaluation one week after his fourth bout of diarrhea. In response to questions concerning possible infectious exposure, he mentioned that he had been hiking in the Smoky Mountains one week before the onset of his illness and that he had drunk untreated water from one of the streams.

The physical exam was entirely normal except that his weight was 7 lbs less than at an examination six months earlier. Examination of the stool showed Giardia Lamblia cysts on the third of three specimens evaluated (figure 2). Stool cultures for all other pathogens were negative. Treatment with quinacrine, 100 mg three times daily, resulted in complete resolution of symptoms within seventy-two hours.

Figure 1. *Flocculation of barium in small bowel.*

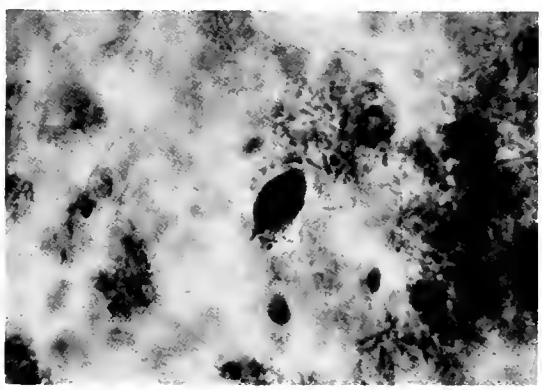

Figure 2. *Stool exam showing Giardia Lamblia cysts.*

Discussion

Giardiasis can occur in almost any part of the world, but it is most commonly noted in travelers to the Soviet Union, Southeastern and Western United States, Mexico, Western South America and South Asia. Oral ingestion of infective cysts from contaminated water is the most common mode of transmission. However, hand to mouth transmission as well as venereal spread via rectal intercourse also occur.

Clinical symptoms usually begin within fifteen days but may take as long as forty-five days. The most common symptoms include diarrhea, abdominal cramps, and weakness often accompanied by a 5-15 lb weight loss. Nausea, vomiting and anorexia may also occur. Low grade fever and intermittent constipation have been reported, but are less frequent. Blood and mucus are rarely found in the stool

From the Department of Medicine, Duke University Medical Center, Durham, NC 27710.

of patients with Giardiasis, which helps to differentiate it from other infectious diarrheas.

The acute stage generally lasts only 3-4 days, but (as in our patient) infection can be prolonged, can recur and can be associated with malabsorption or acquired disaccharidase insufficiency.

One to three stool examinations are usually sufficient to properly identify the Giardia parasites, but they are sometimes difficult to find. Because cysts are passed only intermittently in the stool and trophozoites are excreted only with fulminant diarrhea, it is wise to repeat negative stool examinations in 2-3 weeks. Parasite excretion may be obscured by the use of antibiotics, antacids, antidiarrheals, enema preparations and oily laxatives. Duodenal aspiration via "Enterotest" or duodenal intubation with biopsy and touch preps can be used to demonstrate the organism in difficult cases. Barium examination of the small bowel may show edema and segmentation as in our patient, but is not diagnostic.

The treatment of choice in definitive cases is quinacrine hydrochloride (Atabrine), 100 mg three times daily for one week. This therapy is effective in 95% of cases. Metronidazole (Flagyl), 250 mg three times daily, or furazolidone (Furoxone), 100 mg four times daily for one week, is also effective. Some investigators recommend an empiric trial of therapy when there is a strong clinical suspicion of Giardiasis even in the absence of parasitological confirmation.

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Ruptured Testicle: Acute Presentation and Treatment

James H. Fennell, B.S., PA-C*, Edward O. Janosko, M.D.†, and E. Jackson Allison, Jr., M.D., M.P.H.*

Traditionally, blunt, non-penetrating trauma to the scrotum resulting in testicular rupture has been considered uncommon, with only approximately 50 cases reported in the medical literature;[1, 2] however, many clinicians now speculate that this entity is underreported due to misdiagnosis.[3, 4] A more aggressive approach to scrotal hematoma has been advocated.[1, 3, 4]

We report two cases of ruptured testicle which presented to the Emergency Department at Pitt County Memorial Hospital.

Case Reports

Case 1

A 34-year-old man was hit in the right testicle by a softball; within 24 hours he experienced right testicular swelling. He presented to Pitt County Memorial Hospital Emergency Department.

Physical exam demonstrated a normal, healthy black male. Genital exam showed the left testicle and hemiscrotum to be within normal limits. The right testicle was swollen, tense and very tender. Urinalysis revealed 2+ blood. Right scrotal hematoma was diagnosed and bed rest with scrotal support and analgesics was prescribed. The patient was referred to a urologist who agreed to see him in three days.

On the day of admission, the patient's right scrotum was enlarged. The testicle could not be palpated. A hematocele was present and the clinical diagnosis of ruptured testicle was made. The patient was sent to the operating room where, under general anesthesia, he underwent scrotal exploration. A right, tense, hematocele and a transverse rupture of the testicle (figure 1) with necrotic spermatic tubules were discovered. The testicle was debrided and closed. The hematocele was drained and the scrotum was closed. The patient was discharged three days postoperatively. Four weeks following repair, the testicle was approximately 25% smaller than normal but was in good position and otherwise normal to examination.

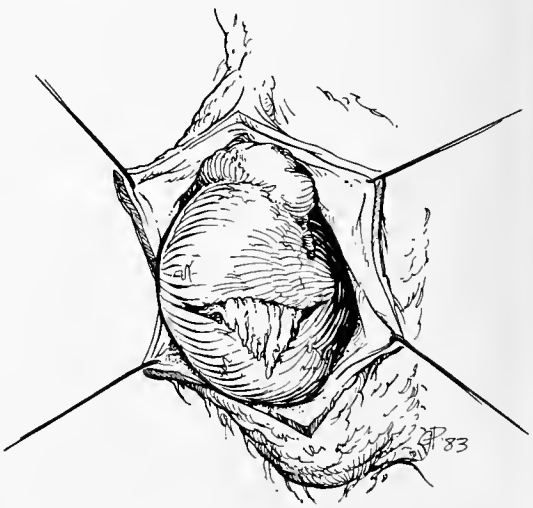

Figure 1. *Ruptured testicle.*

From the *Department of Emergency Medicine and the †Division of Urology, Department of Surgery, East Carolina University School of Medicine, Greenville, NC 27834.

Case 2

A 48-year-old white man suffered a C-3 neck fracture with subsequent quadriplegia. The patient was hospitalized at a distant hospital for initial care. He was treated with a Foley catheter as well as intermittent catheterizations. After he was diagnosed as having traumatic epididymitis, he was transferred to the Regional Rehabilitation Center at Pitt County Memorial Hospital several weeks later where he was seen in consultation by the urology service. At that time, his testicle was found to be poorly palpable secondary to swelling of the right scrotum. He was taken to the operating room where scrotal exploration revealed the testicle to be ruptured with extension of the seminiferous tubules concomitant with abscess formation. The testicle was unsalvageable and was removed. Postoperatively the patient did well without any scrotal complications. He subsequently regained some neurologic function and was continued on his catheterization regimen. He was transferred back to his local hospital.

Discussion

The incidence of testicular rupture is probably underreported. Generally, conservative management consisting of analgesia and testicular support is the method chosen for blunt, non-penetrating trauma to the scrotum.[2] The methods for diagnosis and treatment of the latter are now being revamped for the clinician in the acute setting.

Athletic events, motorcycle accidents and kicks in the groin account for the majority of testicular injuries, the right testicle being injured most often owing to its higher position in the scrotum.[3] The mechanism of injury calls for a blunt force to be applied to the scrotum anteriorly and from below. The force will pin the higher testicle (usually the right) against the pelvic ramus.[2, 3] The continued force will cause the tunica albuginea to rupture with extrusion of the seminiferous tubules. A hematocele will form with visible swelling and ecchymosis. The area will be exquisitely tender to manipulation.

The more conservative, traditional approach of ice, elevation, analgesia and bed rest is now regarded as being of little value.[2-4] Early surgical exploration with decompression of the hematocele, debridement and primary closure of the tunica albuginea, if needed, is the more aggressive primary approach. Surgical intervention should occur within 24-48 hours post-traumatically for best results. Good function of the affected testis is usually accomplished after early intervention. The morbidity of the injured testis rises dramatically with time after the traumatic event.[2, 5]

Many authors feel early surgical exploration should be called for with any clinical signs or symptoms suggesting hematocele, enlarging hematoma or scrotal masses.[2-5] The generalization can be made that any non-penetrating, blunt trauma to the scrotum with resultant enlarging scrotal mass or hematocele is a ruptured testicle until proven otherwise.[3]

Surgical exploration is the definitive method for diagnosis. Even if surgical intervention proves that a rupture has not occurred, the simple decompression of the hematocele with a resultant decrease in the amount of ischemia will demonstrably increase the patient's comfort and will decrease complications due to impaired blood supply.[4-6]

One promising method of acute diagnosis that has been developed in recent years is ultrasonography (gray scale). Ultrasound is a fast, increasingly reliable method for early detection of intrascrotal hematocele, hematoma and testicular rupture. This method may aid the clinician in requesting an early urological consult.[7]

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All Thrombocytopenia Is Not Autoimmune

John J. Stuart, M.D.

A 22-year-old white woman was referred with a history of thrombocytopenia and a recent exacerbation of bruising. Thrombocytopenia was first noted when she was 14 with platelet counts ranging from 60,000 to 80,000. At that time, she was seen by a hematologist and her condition was diagnosed as autoimmune thrombocytopenic purpura. Treatment with both glucocorticoids and splenectomy was discussed, but the patient refused these because of the possible side effects. In subsequent years she noticed mild easy bruising, but had no difficulty with spontaneous bleeding. Recently she had developed bruising after water skiing which concerned her. Her platelet count at another hospital was 47,000 and her blood smear showed numerous large platelets. Past medical history was unremarkable with no prior surgery. Her parents and brother and sister had never reported easy bruising or bleeding.

Physical examination was normal except for scattered bruises on her lower extremities.

The laboratory evaluation consisted initially of a blood count and smear. The hct was 44.7%, the white count was 5,200/μl with a normal differential, and her platelet count

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was 70,000/μl. Examination of her blood smear was unremarkable except for occasional large platelets. A bone marrow examination was normal and showed a normal number of megakaryocytes. Because of the long-standing, stable nature of the thrombocytopenia, the possibility of familial thrombocytopenia was considered despite the negative family history. A platelet count obtained on the father was 83,000/μl while that on the mother was 308,000/μl. Since a familial thrombocytopenia appeared likely, the patient's smear was again reviewed and this time faint Döhle-like bodies were seen in many of the segmented neutrophils and monocytes. Occasional platelets were noted to be as large as red cells. Examination of the father's blood smear showed similar findings. Eventually, platelet counts were obtained on the brother and sister, and also were low, and their blood smears also showed findings consistent with the May-Hegglin[1] anomaly.

Discussion

The possibility of a familial thrombocytopenia should always be kept in mind when evaluating thrombocytopenia, especially when it is long-standing and nonprogressive. The May-Hegglin anomaly, first described in 1909, is inherited in an autosomal dominant fashion. The tendency to easy bruising and bleeding may vary greatly among the affected members of the family and is proportional to the degree of thrombocytopenia. There has been insufficient experience to ascertain whether splenectomy or glucocorticoids are of benefit, but usually the bleeding disorder is so mild that no therapy is needed.

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Herpetic Whitlow

Cynthia Mulrow, M.D., J. Trig Brown, M.D., William B. Lide, M.D., and G. Ralph Corey, M.D.

Herpes virus infections of the fingers are a recognized occupational hazard of medical and dental personnel.[1] Most often associated with herpes simplex virus Type 1, these infections are commonly traced to contact with oral secretions. In the absence of such contact, the diagnosis of herpetic whitlow is often overlooked.

Case Report

An eighteen-year-old female college student had a three year history of anorexia nervosa. She had recently maintained her weight at 75% of ideal and had experienced no complications other than amenorrhea. She presented to the medical clinic with pain in the first finger of her right hand. Throbbing pain began forty-eight hours before presentation, and twenty-four hours later a large blister appeared on the distal aspect of the finger. There was no history of trauma, burn, sexual contact or prior skin lesions.

Physical examination revealed a very thin young woman. The only abnormality was an erythematous, blistered, first finger of the right hand (figure 1). A Tzanck prep on fluid from this vesicle showed multinucleated giant cells typical of herpes infection (figure 2).

Topical Acyclovir was administered with complete resolution of symptoms within a two week period.

Discussion

Although herpetic whitlow is most commonly caused by Type 1 virus infection related to contact with oral herpes, it can occur secondary to herpes simplex virus Type 2, presumably through contact with abraded genital lesions.[2]

Figure 1. *Herpes skin lesion.*

Figure 2. *Tzanck prep showing multinucleated giant cells.*

From the Department of Medicine, Duke University Medical Center, Durham, NC 27710.

Symptoms of infection appear three to five days after contact and consist of severe throbbing pain followed by the development of small vesicles on an erythematous base. The vesicles enlarge and may coalesce to form a large, hemorrhagic vesicle as in our patient. Secondary vesicles sometimes appear in the surrounding skin. The vesicle fluid is serous rather than purulent as in bacterial infection. Over a fourteen to twenty-one day period, the vesicles evolve through shallow ulceration to crusting and finally to complete healing. Fever, lymphadenitis, lymphangitis and severe neuralgia are seen in a few patients, but most do not have constitutional complaints.

Diagnosis is confirmed with the presence of multinucleated giant cells on Giemsa stain (Tzanck prep). Direct fluid culture or rising immunofluorescent antibody titers are diagnostic, but not often needed.

Traditional therapy relies on supportive care with mild analgesics. Active antiviral chemotherapy with continuously applied 40% idoxuridine in dimethyl sulfoxide has been reported to decrease length of pain from seven days to two and to decrease viral shedding from three weeks to one.[3] Whether this therapy prevents recurrences is not known. Although surgical therapy has been felt to be contraindicated in the past, there are now reports of immediate relief of pain without complications with minor nail decompression procedures.[4]

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BRIEF SUMMARY

PROCARDIA® (nifedipine) **CAPSULES**

For Oral Use

INDICATIONS AND USAGE. I. Vasospastic Angina. PROCARDIA (nifedipine) is indicated for the management of vasospastic angina confirmed by any of the following criteria: 1) classical pattern of angina at rest accompanied by ST segment elevation, 2) angina or coronary artery spasm provoked by ergonovine, or 3) angiographically demonstrated coronary artery spasm. In those patients who have had angiography, the presence of significant fixed obstructive disease is not incompatible with the diagnosis of vasospastic angina, provided that the above criteria are satisfied. PROCARDIA may also be used where the clinical presentation suggests a possible vasospastic component but where vasospasm has not been confirmed, e.g., where pain has a variable threshold on exertion or in unstable angina where electrocardiographic findings are compatible with intermittent vasospasm, or when angina is refractory to nitrates and/or adequate doses of beta blockers.

II. Chronic Stable Angina (Classical Effort-Associated Angina). PROCARDIA is indicated for the management of chronic stable angina (effort-associated angina) without evidence of vasospasm in patients who remain symptomatic despite adequate doses of beta blockers and/or organic nitrates or who cannot tolerate those agents.

In chronic stable angina (effort-associated angina) PROCARDIA has been effective in controlled trials of up to eight weeks duration in reducing angina frequency and increasing exercise tolerance, but confirmation of sustained effectiveness and evaluation of long-term safety in those patients are incomplete.

Controlled studies in small numbers of patients suggest concomitant use of PROCARDIA and beta blocking agents may be beneficial in patients with chronic stable angina, but available information is not sufficient to predict with confidence the effects of concurrent treatment, especially in patients with compromised left ventricular function or cardiac conduction abnormalities. When introducing such concomitant therapy, care must be taken to monitor blood pressure closely since severe hypotension can occur from the combined effects of the drugs. (See Warnings.)

CONTRAINDICATIONS. Known hypersensitivity reaction to PROCARDIA.

WARNINGS. Excessive Hypotension. Although in most patients the hypotensive effect of PROCARDIA is modest and well tolerated, occasional patients have had excessive and poorly tolerated hypotension. These responses have usually occurred during initial titration or at the time of subsequent upward dosage adjustment, and may be more likely in patients on concomitant beta blockers.

Severe hypotension and/or increased fluid volume requirements have been reported in patients receiving PROCARDIA together with a beta blocking agent who underwent coronary artery bypass surgery using high dose fentanyl anesthesia. The interaction with high dose fentanyl appears to be due to the combination of PROCARDIA and a beta blocker, but the possibility that it may occur with PROCARDIA alone, with low doses of fentanyl, in other surgical procedures, or with other narcotic analgesics cannot be ruled out. In PROCARDIA treated patients where surgery using high dose fentanyl anesthesia is contemplated, the physician should be aware of these potential problems and, if the patient's condition permits, sufficient time (at least 36 hours) should be allowed for PROCARDIA to be washed out of the body prior to surgery.

Increased Angina. Occasional patients have developed well documented increased frequency, duration or severity of angina on starting PROCARDIA or at the time of dosage increases. The mechanism of this response is not established but could result from decreased coronary perfusion associated with decreased diastolic pressure with increased heart rate, or from increased demand resulting from increased heart rate alone.

Beta Blocker Withdrawal. Patients recently withdrawn from beta blockers may develop a withdrawal syndrome with increased angina, probably related to increased sensitivity to catecholamines. Initiation of PROCARDIA treatment will not prevent this occurrence and might be expected to exacerbate it by provoking reflex catecholamine release. There have been occasional reports of increased angina in a setting of beta blocker withdrawal and PROCARDIA initiation. It is important to taper beta blockers if possible, rather than stopping them abruptly before beginning PROCARDIA.

Congestive Heart Failure. Rarely, patients usually receiving a beta blocker, have developed heart failure after beginning PROCARDIA. Patients with tight aortic stenosis may be at greater risk for such an event.

PRECAUTIONS. General: Hypotension. Because PROCARDIA decreases peripheral vascular resistance, careful monitoring of blood pressure during the initial administration and titration of PROCARDIA is suggested. Close observation is especially recommended for patients already taking medications that are known to lower blood pressure. (See Warnings.)

Peripheral edema. Mild to moderate peripheral edema, typically associated with arterial vasodilation and not due to left ventricular dysfunction, occurs in about one in ten patients treated with PROCARDIA. This edema occurs primarily in the lower extremities and usually responds to diuretic therapy. With patients whose angina is complicated by congestive heart failure, care should be taken to differentiate this peripheral edema from the effects of increasing left ventricular dysfunction.

Drug Interactions. Beta adrenergic blocking agents: (See Indications and Warnings.) Experience in over 1400 patients in a non-comparative clinical trial has shown that concomitant administration of PROCARDIA and beta-blocking agents is usually well tolerated, but there have been occasional literature reports suggesting that the combination may increase the likelihood of congestive heart failure, severe hypotension or exacerbation of angina.

Long acting nitrates: PROCARDIA may be safely co-administered with nitrates, but there have been no controlled studies to evaluate the antianginal effectiveness of this combination.

Digitalis: Administration of PROCARDIA with digoxin increased digoxin levels in nine of twelve normal volunteers. The average increase was 45%. Another investigator found no increase in digoxin levels in thirteen patients with coronary artery disease. In an uncontrolled study of over two hundred patients with congestive heart failure during which digoxin blood levels were not measured, digitalis toxicity was not observed. Since there have been isolated reports of patients with elevated digoxin levels, it is recommended that digoxin levels be monitored when initiating, adjusting, and discontinuing PROCARDIA to avoid possible over- or under-digitalization.

Carcinogenesis, mutagenesis, impairment of fertility: When given to rats prior to mating, nifedipine caused reduced fertility at a dose approximately 30 times the maximum recommended human dose.

Pregnancy, Category C. Please see full prescribing information with reference to teratogenicity in rats, embryotoxicity in rats, mice and rabbits, and abnormalities in monkeys.

ADVERSE REACTIONS. The most common adverse events include dizziness or light-headedness, peripheral edema, nausea, weakness, headache and flushing, each occurring in about 10% of patients. Transient hypotension in about 5%, palpitation in about 2% and syncope in about 0.5%. Syncopal episodes did not recur with reduction in the dose of PROCARDIA or concomitant antianginal medication. Additionally, the following have been reported: muscle cramps, nervousness, dyspnea, nasal and chest congestion, diarrhea, constipation, inflammation, joint stiffness, shakiness, sleep disturbances, blurred vision, difficulties in balance, dermatitis, pruritus, urticaria, fever, sweating, chills, and sexual difficulties. Very rarely, introduction of PROCARDIA therapy was associated with an increase in anginal pain, possibly due to associated hypotension.

In addition, more serious adverse events were observed, not readily distinguishable from the natural history of the disease in these patients. It remains possible, however, that some or many of these events were drug related. Myocardial infarction occurred in about 4% of patients and congestive heart failure or pulmonary edema in about 2%. Ventricular arrhythmias or conduction disturbances each occurred in fewer than 0.5% of patients.

Laboratory Tests. Rare, mild to moderate, transient elevations of enzymes such as alkaline phosphatase, CPK, LDH, SGOT and SGPT have been noted, and a single incident of significantly elevated transaminases and alkaline phosphatase was seen in a patient with a history of gall bladder disease after about eleven months of nifedipine therapy. The relationship to PROCARDIA therapy is uncertain. These laboratory abnormalities have rarely been associated with clinical symptoms. Cholestasis, possibly due to PROCARDIA therapy, has been reported twice in the extensive world literature.

HOW SUPPLIED. Each orange, soft gelatin PROCARDIA CAPSULE contains 10 mg of nifedipine. PROCARDIA CAPSULES are supplied in bottles of 100 (NDC 0069-2600-66), 300 (NDC 0069-2600-72), and unit dose (10x10) (NDC 0069-2600-41). The capsules should be protected from light and moisture and stored at controlled room temperature 59° to 77°F (15° to 25°C) in the manufacturer's original container.

More detailed professional information available on request.

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Side effects are usually mild (most frequently reported are dizziness or lightheadedness, peripheral edema, nausea, weakness, headache and flushing, each occurring in about 10% of patients, transient hypotension in about 5%, palpitation in about 2% and syncope in about 0.5%)

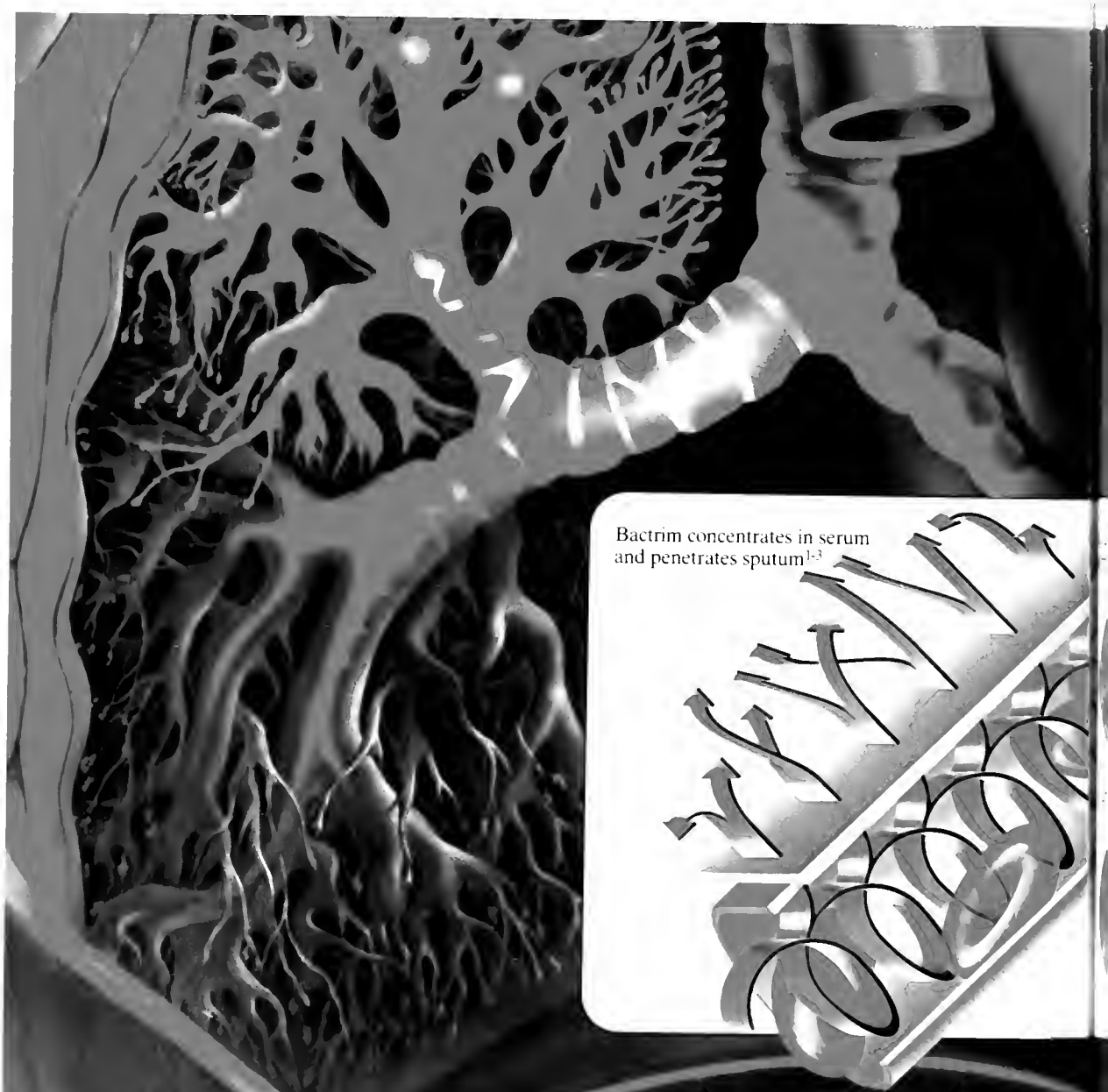
for the varied faces of angina

PROCARDIA®
(NIFEDIPINE) *Capsules 10 mg*

*Procardia is indicated for the management of
1) Confirmed vasospastic angina
2) Angina where the clinical presentation suggests a possible vasospastic component
3) Chronic stable angina without evidence of vasospasm in patients who remain symptomatic despite adequate doses of beta blockers and/or nitrates or who cannot tolerate these agents. In chronic stable angina (effort-associated angina) PROCARDIA has been effective in controlled trials of up to eight weeks' duration in reducing angina frequency and increasing exercise tolerance, but confirmation of sustained effectiveness and evaluation of long-term safety in these patients are incomplete.

Please see PROCARDIA *brief summary on adjoining page*

Bactrim™ attacks the
(trimethoprim and sulfamethoxazole/Roche)
in acute exacerbations



ROCHE

major pathogens of chronic bronchitis*

Bactrim clears sputum of susceptible bacteria

In sputum cultures from patients with acute exacerbations of chronic bronchitis, *H. influenzae* and *S. pneumoniae* are isolated more often than any other pathogens.[4,5] One study of transtracheal aspirates from 76 patients with acute exacerbations found that 80% of the isolates were of these two pathogens.[5]

Bactrim is effective *in vitro* against most strains of both *S. pneumoniae* and *H. influenzae*—even ampicillin-resistant strains. And in acute exacerbations of chronic bronchitis involving these two pathogens, sputum cultures taken seven days after a two-week course of therapy showed that Bactrim eradicated these bacteria in 91% (50 of 55) of the patients treated.[6]

ttacks *H. influenzae*—even ampicillin-resistant strains

attacks *S. pneumoniae*

Bactrim reduces coughing and sputum production

In three double-blind comparisons with ampicillin *q.i.d.*, Bactrim DS proved equally effective on all clinical parameters.[7-9] Bactrim reduced the frequency and severity of coughing, reduced the amount of sputum produced and cleared the sputum of purulence.

Bactrim has the added advantages of *b.i.d.* dosage convenience and a lower incidence of diarrhea than with ampicillin, and it is useful in patients allergic to penicillins.

Bactrim also proved more effective than tetracyclines in 10 clinical trials involving nearly 700 patients.[10] Overall clinical condition of the patients, changes in sputum purulence, reduction in sputum volume and microbiological clearance of pathogens—all improved more with Bactrim therapy than with tetracyclines. G.I. side effects occurred in only 7% of patients treated with Bactrim compared with 12% of tetracycline-treated patients. (See Adverse Reactions in summary of product information on next page.)

Bactrim is contraindicated in pregnancy at term and nursing mothers, infants under two months of age, documented megaloblastic anemia due to folate deficiency and hypersensitivity.

Bactrim DS. For acute exacerbations of chronic bronchitis in adults* when it offers an advantage over single-agent antibacterials.

References: 1. Hughes DTD, Bye A, Hodder P: *Adv Antimicrob Antineoplastic Chemother I*/2:1105-1106, 1971. **2.** Jordan GW *et al: Can Med Assoc J 112*:91S-95S, Jun 14, 1975. **3.** Beck H, Pechere JC: *Prog Antimicrob Anticancer Chemother 1*:663-667, 1969. **4.** Quintiliani R: Microbiological and therapeutic considerations in exacerbations of chronic bronchitis, in *Chronic Bronchitis and Its Acute Exacerbations: Current Diagnostic and Therapeutic Concepts;* Princeton Junction, NJ, Communications Media for Education, Inc., 1980, pp. 9-12. **5.** Schreiner A *et al: Infection 6*(2):54-56, 1978. **6.** Data on file, Hoffmann-La Roche Inc., Nutley, NJ. **7.** Chodosh S: Treatment of acute exacerbations of chronic bronchitis: results of a double-blind crossover clinical trial, in *Chronic Bronchitis and Its Acute Exacerbations: Current Diagnostic and Therapeutic Concepts. Op. cit.*, pp. 15-16. **8.** Chervinsky P: Double-blind clinical comparisons between trimethoprim-sulfamethoxazole (Bactrim™) and ampicillin in the treatment of bronchitic exacerbations. *Ibid.*, pp. 17-18. **9.** Dulfano MJ: Trimethoprim-sulfamethoxazole vs. ampicillin in the treatment of exacerbations of chronic bronchitis. *Ibid.*, pp. 19-20. **10.** Medici TC: Trimethoprim-sulfamethoxazole (Bactrim™) in treating acute exacerbations of chronic bronchitis: summary of European clinical experience. *Ibid.*, pp. 13-14.

Economical b.i.d.

Bactrim™ DS

(160 mg trimethoprim and 800 mg sulfamethoxazole/Roche)

*Due to susceptible organisms. **Please see next page for summary of product information.**

Bactrim™

(trimethoprim and sulfamethoxazole/Roche)

Before prescribing, please consult complete product information, a summary of which follows:

Indications and Usage: For the treatment of urinary tract infections due to susceptible strains of the following organisms: *Escherichia coli, Klebsiella-Enterobacter, Proteus mirabilis, Proteus vulgaris, Proteus morganii.* It is recommended that initial episodes of uncomplicated urinary tract infections be treated with a single effective antibacterial agent rather than the combination. *Note* The increasing frequency of resistant organisms limits the usefulness of all antibacterials, especially in these urinary tract infections

For acute otitis media in children due to susceptible strains of *Haemophilus influenzae* or *Streptococcus pneumoniae* when in physician's judgment it offers an advantage over other antimicrobials. To date, there are limited data on the safety of repeated use of Bactrim in children under two years of age. Bactrim is not indicated for prophylactic or prolonged administration in otitis media at any age.

For acute exacerbations of chronic bronchitis in adults due to susceptible strains of *Haemophilus influenzae* or *Streptococcus pneumoniae* when in physician's judgment it offers an advantage over a single antimicrobial agent.

For enteritis due to susceptible strains of *Shigella flexneri* and *Shigella sonnei* when antibacterial therapy is indicated.

Also for the treatment of documented *Pneumocystis carinii* pneumonitis.

Contraindications: Hypersensitivity to trimethoprim or sulfonamides, patients with documented megaloblastic anemia due to folate deficiency, pregnancy at term; nursing mothers because sulfonamides are excreted in human milk and may cause kernicterus, infants less than 2 months of age

Warnings: BACTRIM SHOULD NOT BE USED TO TREAT STREPTOCOCCAL PHARYNGITIS. Clinical studies show that patients with group A β-hemolytic streptococcal tonsillopharyngitis have higher incidence of bacteriologic failure when treated with Bactrim than do those treated with penicillin. Deaths from hypersensitivity reactions, agranulocytosis, aplastic anemia and other blood dyscrasias have been associated with sulfonamides. Experience with trimethoprim is much more limited but occasional interference with hematopoiesis has been reported as well as an increased incidence of thrombopenia with purpura in elderly patients on certain diuretics, primarily thiazides. Sore throat, fever, pallor, purpura or jaundice may be early signs of serious blood disorders. Frequent CBC's are recommended, therapy should be discontinued if a significantly reduced count of any formed blood element is noted.

Precautions: *General* Use cautiously in patients with impaired renal or hepatic function, possible folate deficiency, severe allergy or bronchial asthma. In patients with glucose-6-phosphate dehydrogenase deficiency, hemolysis, frequently dose-related, may occur. During therapy, maintain adequate fluid intake and perform frequent urinalyses, with careful microscopic examination, and renal function tests, particularly where there is impaired renal function. Bactrim may prolong prothrombin time in those receiving warfarin; reassess coagulation time when administering Bactrim to these patients

Pregnancy Teratogenic Effects. Pregnancy Category C. Because trimethoprim and sulfamethoxazole may interfere with folic acid metabolism, use during pregnancy only if potential benefits justify the potential risk to the fetus

Adverse Reactions: All major reactions to sulfonamides and trimethoprim are included, even if not reported with Bactrim. *Blood dyscrasias.* Agranulocytosis, aplastic anemia, megaloblastic anemia, thrombopenia, leukopenia, hemolytic anemia, purpura, hypoprothrombinemia and methemoglobinemia. *Allergic reactions.* Erythema multiforme, Stevens-Johnson syndrome, generalized skin eruptions, epidermal necrolysis, urticaria, serum sickness, pruritus, exfoliative dermatitis, anaphylactoid reactions, periorbital edema, conjunctival and scleral injection, photosensitization, arthralgia and allergic myocarditis. *Gastrointestinal reactions.* Glossitis, stomatitis, nausea, emesis, abdominal pains, hepatitis, diarrhea, pseudomembranous colitis and pancreatitis. *CNS reactions.* Headache, peripheral neuritis, mental depression, convulsions, ataxia, hallucinations, tinnitus, vertigo, insomnia, apathy, fatigue, muscle weakness and nervousness. *Miscellaneous reactions.* Drug fever, chills, toxic nephrosis with oliguria and anuria, periarteritis nodosa and L. E. phenomenon. Due to certain chemical similarities to some goitrogens, diuretics (acetazolamide, thiazides) and oral hypoglycemic agents, sulfonamides have caused rare instances of goiter production, diuresis and hypoglycemia in patients; cross-sensitivity with these agents may exist. In rats, long-term therapy with sulfonamides has produced thyroid malignancies

Dosage: Not recommended for infants less than two months of age.

URINARY TRACT INFECTIONS AND SHIGELLOSIS IN ADULTS AND CHILDREN, AND ACUTE OTITIS MEDIA IN CHILDREN

Adults Usual adult dosage for urinary tract infections—1 DS tablet (double strength), 2 tablets (single strength) or 4 teasp. (20 ml) b.i.d. for 10-14 days. Use identical daily dosage for 5 days for shigellosis

Children Recommended dosage for children with urinary tract infections or acute otitis media—8 mg/kg trimethoprim and 40 mg/kg sulfamethoxazole per 24 hours, in two divided doses for 10 days. Use identical daily dosage for 5 days for shigellosis

For patients with renal impairment Use recommended dosage regimen when creatinine clearance is above 30 ml/min. If creatinine clearance is between 15 and 30 ml/min, use one-half the usual regimen. Bactrim is not recommended if creatinine clearance is below 15 ml/min

ACUTE EXACERBATIONS OF CHRONIC BRONCHITIS IN ADULTS.

Usual adult dosage 1 DS tablet (double strength), 2 tablets (single strength) or 4 teasp. (20 ml) b.i.d. for 14 days

PNEUMOCYSTIS CARINII PNEUMONITIS

Recommended dosage 20 mg/kg trimethoprim and 100 mg/kg sulfamethoxazole per 24 hours in equal doses every 6 hours for 14 days. See complete product information for suggested children's dosage table

Supplied: *Double Strength (DS) tablets*, each containing 160 mg trimethoprim and 800 mg sulfamethoxazole, bottles of 100, Tel-E-Dose® packages of 100, Prescription Paks of 20 and 28. *Tablets*, each containing 80 mg trimethoprim and 400 mg sulfamethoxazole—bottles of 100 and 500, Tel-E-Dose® packages of 100, Prescription Paks of 40. *Pediatric Suspension*, containing 40 mg trimethoprim and 200 mg sulfamethoxazole per teaspoonful (5 ml); cherry flavored—bottles of 100 ml and 16 oz (1 pint). *Suspension*, containing 40 mg trimethoprim and 200 mg sulfamethoxazole per teaspoonful (5 ml), fruit-licorice flavored—bottles of 16 oz (1 pint)

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Nutley, New Jersey 07110

About Books

The University of North Carolina Press May Be a Rare Bargain

Matthew N. Hodgson

Thirty years ago, Alfred A. Knopf, already deemed by his peers to be the most distinguished American book publisher of this century, was visiting in North Carolina. When asked by a Durham newspaper reporter about his impressions of the Old North State, he responded in his characteristically direct manner: "Among those who count, the University of North Carolina Press is the best thing in the state. It is so good that the Chamber of Commerce should support it."

This was high praise from the publisher and personal friend of John Galsworthy, Joseph Conrad, Thomas Mann, Andre Gide, Willa Cather, and other literary greats on both sides of the Atlantic.

There is considerable evidence that suggests that Mr. Knopf's observation was not a mere hyperbole. Letters from such intellectuals as Charles Beard, Walter Lippman, Harold Laski, and Adolph Berle in the Southern Historical Collection emphatically suggest that the Press was not only an important scholarly publisher but that it was the chief interpreter of the South to the rest of the nation and, indeed, to the international academic community.

More recently (October 18, 1981), the *New York Times* in a feature article about the UNC Press described it as "a publisher of national importance," while in the March 3, 1983 issue of *The New York Review of Books*, the most distinguished living historian of the South, Professor C. Vann Woodward of Yale University, judged the Press to be "the most important single influence in the modernization of southern thought."

Until the founding of the Press in 1922, the pattern of university publishing had been set by the presses of the great patrician universities of the Northeast, followed by those at Chicago and at Berkeley. For the most part, books published by these presses were formal exercises in critical editing, historical research, and polite letters. At Chapel Hill, the approach was quite different. While the Press did publish its fair share of conventional specialized studies, mostly in the humanities and social sciences, its larger attention was focused upon its immediate locale — North Carolina and the South. At first by chance and then by design, the Press published scores of books about every aspect of southern history, life, and culture. While appreciative of the peculiar charm of the region and its inhabitants, many of these books, written by southern scholars and laymen alike, addressed themselves to the particular societal and economic problems of the region.

From The University of North Carolina Press, Brooks Hall, Chapel Hill, NC 27514.

By today's standards, some of these books were pretty tame and few could be described as light "bedside" reading. But their charts, graphs, and statistics (laboriously compiled: this was before the advent of computers) were heady stuff to those southerners who wished to move their region into the mainstream of 20th century American society. Here were facts, assembled by southern scholars and published by a southern university press, that seriously questioned certain aspects of what my generation and its predecessors had been raised to accept (and, indeed, to defend) as "our southern way of life."

At the same time, the Press was not indifferent to the natural beauty and wealth of its region or the marked civility and unique folkways of its people, both white and black. Scores of books bearing the imprint of Chapel Hill appeared which, taken together, have given North Carolina the richest body of historical and cultural literature of any American state with the possible exception of Massachusetts.

The relationship between the medical profession in North Carolina and the UNC Press is, at once, both close and distant. Many physicians and the members of their families buy and enjoy Press books, particularly its popular guides to the flora and fauna of our state.

A few years ago, the Press also lent its technical services to the authors and editors of History of Medicine in North Carolina, published under the auspices of the North Carolina Medical Society.

But it must be admitted that university presses, including that at Chapel Hill, have published relatively few books specifically designed to meet the academic needs or professional interests of health science practitioners. To a degree, this reflects the historic lack of intercourse between medical faculties and their colleagues in other schools of their respective universities. My perception is that this division is softening. The chancellors of both Duke University and the University of North Carolina at Chapel Hill earned their doctorates in medicine; and a closer sense of community seems to be developing among the several faculties of each of the professional schools of these institutions.

Ten years hence, I think that the booklists of many, if not most, university presses will reflect this change, and will include a generous number of new titles (some specialized, others less so) by members of the medical fraternity. This is as it should be. The manuscript review process at most university presses (considered by some academic physicians to be cumbersome and time-consuming) can be accelerated while the costs of medical publication could be

reduced markedly below those of both commercial firms and the redundant "publishing centers" that seem to have proliferated at or near medical school complexes in recent years. The Press is especially interested in publishing scholarly manuscripts relating to the societal and economic aspects of health care.

Publishing opportunities exist, too, for the private practitioner. While the UNC Press does not publish memoirs, genealogies, or other essentially personal or familial manuscripts, we are always alert to projects of more general public interest. Indeed, the late Dr. William Justice of Asheville remains the Press's best-selling author. His *Wildflowers of North Carolina* (prepared in collaboration with Professor Ritchie Bell) has sold over 70,000 copies and continues to attract new readers each year.

Practice Tips

Allergy Testing

Committee on Blue Shield

Following are the findings of the Ad Hoc Subcommittee on Allergy as revised and recommended by the Committee on Blue Shield of the North Carolina Medical Society.

1. No scientific documentation had been presented which establishes medical necessity for hospitalization for food challenge ingestion testing unless the threat of anaphylaxis or hypovolemic shock exists. There were no published controlled studies submitted to support this treatment modality for arthritis. The Committee recommends that hospitalization for food challenge ingestion testing be considered an experimental modality for arthritis treatment reserved for use in controlled experiments only. The more generally accepted method for food allergy documentation is by diet elimination and challenge that does not require hospitalization.

2. Cytotoxic food or inhalant testing is not a generally medically acceptable technique. Though claimed to be useful for diagnosis of both food and inhalant allergy by a number of physicians the test has never been proved effective by controlled studies, nor has a scientific basis for its use been demonstrated.

3. The concept of "neutralization" of symptoms by injections or sublingual drops following provocation of symptoms by intradermal, subcutaneous or sublingual route is not a generally accepted medical procedure. There are no controlled studies demonstrating the effectiveness of these techniques except for Miller's study on intracutaneous provocative testing. Whether Miller's study on intracutaneous provocative testing was an adequate double blind study is debatable. Furthermore, there are controlled studies which have shown these methods to be ineffective for the diagnosis and treatment of allergic conditions. The Committee recommends that these techniques be regarded as experimental. The Committee felt that further extensive testing using controlled conditions was necessary before this type of testing and treatment could be considered efficacious.

4. Food injection therapy is not recommended by most allergy specialists and should be regarded as experimental.

5. Scratch or puncture food testing is the testing technique recommended for immediate hypersensitivity. Present conventional methods of diagnosis of food allergy by blinded techniques have shown this testing to be efficacious.

6. Sublingual provocative testing or neutralization is not recommended.

7. The optimal use of RAST testing is limited and testing should be done in duplicate because of the incidence of results that may not be appropriate for interpretation of the patient's allergic conditions. The Blue Shield Committee, considering the known limitations of RAST testing which have evolved over the past three years recommends that RAST testing be covered only through individual considerations and not as a routine screening procedure.

8. There is no medical indication for patient retesting within a year after allergy injections are started.

9. There is no medical indication for retesting the patient responding satisfactorily to allergy injections.

10. Allergy testing of a patient with symptoms for only 3 or 4 weeks out of a year is not considered optimal allergy treatment.

11. The number of allergy tests administered should be determined only after thorough allergy history and physical exam.

Bulletin Board

Continuing Medical Education

Please note: 1. The Continuing Medical Education Programs at Bowman Gray, Duke, East Carolina and UNC Schools of Medicine, Dorothea Dix, and Burroughs Wellcome Company are accredited by the American Medical Association. Therefore CME programs sponsored or cosponsored by these schools automatically qualify for AMA Category 1 credit toward the AMA's Physician Recognition Award, and for North Carolina Medical Society Category A credit. Where AAFP credit has been obtained, this also is indicated.

IN STATE

April 30

"Symposium on Adolescent Medicine for Primary Care Physicians"
Place: Chapel Hill
Fee: $95
Credit: 6 hours AMA
Info: Robert J. Senior, M.D., 500 Eastowne Drive Chapel Hill, NC 27514. 919/929-3471

May 4

"Malpractice Awareness — Stat"
Place: Pinehurst
Info: Wayne Parker, Medical Mutual Insurance Company, Box 27444, Raleigh, NC 27611. 919/828-9334

May 7

"The Role of Plastic Surgery in NC"
Place: Pinehurst
Info: Paul Gwyn, M.D., 2901 Maplewood Avenue, Winston-Salem, NC 27103. 919/765-8620

May 10

"Records and Other Necessities"
Place: Rocky Mount
Info: Wayne Parker, Medical Mutual Insurance Company, Box 27444, Raleigh, NC 27611. 919/828-9334

May 11

"Records and Other Necessities"
Place: Wilson
Info: Wayne Parker, Medical Mutual Insurance Company, Box 27444, Raleigh, NC 27611. 919/828-9334

May 11-12

"Breath of Spring, '83"
Place: Winston-Salem
Fee: $100
Credit: 10 hours AMA
Info: Emery C. Miller, M.D., Bowman Gray School of Medicine, Winston-Salem, NC 27103. 919/748-4450

May 12-13

"Anterior Segment Surgery: Advances and Complications"
Place: Durham
Info: Carol Vilas, Box 3802, Duke University Medical Center, Durham, NC 27710. 919/684-6743

May 13

"Recent Advances in the Diagnosis and Treatment of Pediatric Pulmonary Infection"
Place: Durham
Fee: $60
Credit: 12 hours
Info: Alexander Spock, M.D., Box 2994, Duke University Medical Center, Durham, NC 27710. 919/681-3364

May 16

"Records and Other Necessities"
Place: Salisbury
Info: Wayne Parker, Medical Mutual Insurance Company, Box 27444, Raleigh, NC 27611. 919/828-9334

May 17

"Records and Other Necessities"
Place: Albemarle
Info: Wayne Parker, Medical Mutual Insurance Company, Box 27444, Raleigh, NC 27611. 919/828-9334

May 18

"Hypertensive Vascular Disease"
Place: Sanford
Credit: 3.5 hours AMA
Info: Robert S. Cline, M.D., Central Carolina Hospital, Sanford, NC 27330. 919/774-4100. ext. 394

May 19-21

NC Chapter, American College of Surgeons
Place: Wrightsville Beach
Info: Richard Furman, M.D., 702 State Farm Road, Boone, NC 28607. 704/264-2340

May 19-20

"Communication Problems in Autism"
Place: Chapel Hill
Credit: 12 hours AMA
Info: W. B. Wood, M.D., Director CME, 231 MacNider 202H, UNC School of Medicine, Chapel Hill, NC 27514. 919/962-2118

May 20

"Pediatrics Day 1983"
Place: Greenville
Fee: $50
Credit: 6 hours AMA
Info: Edwin W. Monroe, M.D., P.O. Box 7224, Greenville, NC 27834. 919/758-5200

May 20-21

"17th Annual Duke McPherson Otolaryngology Symposium"
Place: Durham
Info: Joseph C. Farmer, M.D., Box 3805, Duke University Medical Center, Durham, NC 27710. 919/684-5238

May 20-21

"Anterior Segment Laser Therapy"
Place: Chapel Hill
Credit: 10 hours AMA
Info: W. B. Wood, M.D., Director CME, 231 MacNider 202H, UNC School of Medicine, Chapel Hill, NC 27514. 919/962-2118

May 21

"3rd Annual Teaching Skills Workshop for Family Medicine"
Info: George Parkerson, M.D., Box 3886, Duke University Medical Center, Durham, NC 27710. 919/471-2571

May 22

"Symposium on Adolescent Medicine for Primary Care Physicians"
Place: Chapel Hill
Fee: $95
Credit: 6 hours AMA
Info: Robert J. Senior, M.D., 500 Eastowne Drive, Chapel Hill, NC 27514. 919/929-3471 or 919/493-2688

May 23-25

"Physically Disabled Adolescent"
Place: Chapel Hill
Credit: 18.5 hours AMA
Info: W. B. Wood, M.D., Director CME, 231 MacNider 202 H, UNC School of Medicine, Chapel Hill, NC 27514. 919/962-2118

May 25-28

"Elder Care: Practical Review of Clinical Topics"
Place: Sea Level
Credit: 17 hours AMA
Info: Harvey Jay Cohen, M.D., Box 3003, Duke University Medical Center, Durham, NC 27710. 919/684-3176

May 26-28

"Cardiology Update for Family Physicians"
Place: Boone
Credit: 16 hours AAFP
Info: North Carolina Academy of Family Physicians, P.O. Box 20146, Raleigh, NC 27619. 919/781-6467

May 27

"Flexible Sigmoidoscopy for the Primary Care Physician"
Place: Winston-Salem
Fee: $100
Credit: 6 hours AMA
Info: Emery C. Miller, M.D., Bowman Gray School of Medicine, Winston-Salem, NC 27103. 919/748-4450

May 27-29

"Medical Update — Selected Topics"
Place: Southern Pines
Fee: $75 plus hotel
Credit: 8 hours AMA, 6 hours AAFP
Info: Barbara S. Page, Wake AHEC, 3000 New Bern Avenue, Raleigh, NC 27610. 919/755-8030

June 2-3

"Orgain Cardiology Symposium"
Info: Galen S. Wagner, M.D., Box 32112, Duke University Medical Center, Durham, NC 27710. 919/681-2255

June 7

"Duke Tuesday"
Place: Durham
Credit: 5 hours
Info: Linda Mace, Division of Urology, Box 3707, Duke University Medical Center, Durham, NC 27710. 919/684-2033

June 8

"Malpractice Awareness — Stat"
Place: Greenshoro
Info: Wayne Parker, Medical Mutual Insurance Company, Box 27444, Raleigh, NC 27611. 919/828-9334

June 8-9

"Fiberoptic Sigmoidoscopy Workshop"
Place: Greenville
Credit: 7 hours AMA
Info: Edwin W. Monroe, M.D., P.O. Box 7224, Greenville, NC 27834. 919/758-5200

June 9-11

"Exercise: Science and Practice"
Place: Chapel Hill
Fee: $90
Credit: 16 hours AMA
Info: Donna Bernhardt, M.S., L.P.T., Department of Allied Health Professions, Medical School Wing C-221H, Chapel Hill, NC 27514. 919/966-5005

June 10

"R. J. Reeves Symposium and Lecture: Advances in Radiology — Implications for the Practicing Radiologist"
Place: Durham
Info: Cindi Easterling, Box 3306, Duke University Medical Center, Durham, NC 27710. 919/684-6485

June 11

"Investigation of Sudden Death: Beginning at the Scene"
Place: Atlantic Beach
Info: Edwin W. Monroe, M.D., P.O. Box 7224, Greenville, NC 27834. 919/758-5200

June 12-15

"Behavioral Aspects of Family Medicine"
Place: Rougemont
Credit: 20 hours
Info: Katharine Munning, Ph.D., Duke-Watts Family Medicine Program, 407 Crutchfield Street, Durham, NC 27704. 919/471-2571

June 16

"Malpractice Awareness — Stat"
Place: Kill Devil Hills
Info: Wayne Parker, Medical Mutual Insurance Company, Box 27444, Raleigh, NC 27611. 919/828-9334

June 16-17

"Duke/Watts Family Medicine Symposium"
Info: Samuel Warburton, M.D., 407 Crutchfield Street, Durham, NC 27704. 919/471-2571

June 22

"Asthma and IPPB, Spirometry"
Place: Sanford
Credit: 3.5 hours AMA
Info: Robert S. Cline, M.D., Central Carolina Hospital, Sanford, NC 27330. 919/774-4100, ext. 394

June 28

"Records and Other Necessities"
Place: Hickory
Info: Wayne Parker, Medical Mutual Insurance Company, Box 27444, Raleigh, NC 27611. 919/828-9334

June 29

"Records and Other Necessities"
Place: Boone
Info: Wayne Parker, Medical Mutual Insurance Company, Box 27444, Raleigh, NC 27611. 919/828-9334

July 1-29

"Medical Mycology"
Place: Durham
Credit: 70 hours
Info: T. G. Mitchell, M.D., Box 3803, Duke University Medical Center, Durham, NC 27710. 919/684-5792

July 7-9

"Topics in Internal Medicine"
Place: Asheville
Fee: $125
Credit: 12 hours, Category 1 AMA
Info: Emery C. Miller, M.D., Bowman Gray School of Medicine, Winston-Salem, NC 27103. 919/748-4450

July 11-15

"25th Annual Postgraduate Course — Morehead Symposium"
Place: Atlantic Beach
Credit: 25 hours
Info: Cindi Easterling, Box 3306, Duke University Medical Center, Durham, NC 27710. 919/684-6485

July 15-17

"Comprehensive Care of the Patient with Tuberculosis in the 1980's"
Place: Black Mountain
Info: Scott Venable, American Lung Association, P.O. Box 27985, Raleigh, NC 27611. 919/832-8326

July 20

"Poisoning and Suicides"
Place: Sanford
Credit: 2 hours, Category I AMA
Info: Robert Cline, M.D., Central Carolina Hospital, 1135 Carthage Street, Sanford, NC 27330. 919/774-4100, ext. 394

July 25-29

"Diagnostic Imaging Postgraduate Course"
Place: Atlantic Beach
Fee: $375 ($200 for those in training)
Credit: 25 hours
Info: Donald R. Kirks, M.D., Box 3834, Duke University Medical Center, Durham, NC 27710. 919/684-2711

August 4

"Records and Other Necessities"
Place: North Wilkesboro
Info: Wayne Parker, Medical Mutual Insurance Company, Box 27444, Raleigh, NC 27611. 919/828-9334

August 17

"Cardiovascular Disease: Risk Reduction Strategies"
Place: Sanford
Credit: 2 hours
Info: Robert Cline, M.D., Central Carolina Hospital, 1135 Carthage Street, Sanford, NC 27330. 919/774-4100, ext. 394

August 23
"Records and Other Necessities"
Place: Asheville
Info: Wayne Parker, Medical Mutual Insurance Company, Box 27444, Raleigh, NC 27611. 919/828-9334

August 27
"Geriatric Education Day"
Place: Raleigh
Credit: 6 hours AAFP
Info: NC Academy of Family Physicians, Box 20146, Raleigh, NC 27612. 919/781-6467

September 1
"Malpractice Awareness — Stat"
Place: Raleigh
Info: Wayne Parker, Medical Mutual Insurance Company, Box 27444, Raleigh, NC 27611. 919/828-9334

September 15-16
"Fifth Annual Health Law Forum: Antitrust Impact on Medical Staffs"
Place: Greenville
Info: Edward E. Hollowell, 1100 Dresser Court, Raleigh, NC 27609. 919/872-2830; in NC call 800/662-7403

September 21
"Third Annual Central Carolina Hospital Symposium"
Place: Sanford
Credit: 2 hours Category 1 AMA
Info: Robert Cline, M.D., Central Carolina Hospital, 1135 Carthage Street, Sanford, NC 27330. 919/774-4100, ext. 394

September 29-October 2
"Diseases of the Upper Urinary Tract"
Place: Pinehurst
Credit: 16 hours Category 1
Info: Linda Mace, Box 3707, Duke University Medical Center, Durham, NC 27710. 919/684-2033

October 3
"Perinatal Medicine Symposium"
Place: Durham
Info: Cindi Easterling, Box 3306, Duke University Medical Center, Durham, NC 27710. 919/684-6485

October 18
"Malpractice Awareness — Stat"
Place: Asheville
Info: Wayne Parker, Medical Mutual Insurance Company, Box 27444, Raleigh, NC 27611. 919/828-9334

October 19
"Cerebrovascular Accidents, Acute Care and Rehabilitation"
Place: Sanford
Credit: 2 hours Category 1 AMA
Info: Robert Cline, M.D., Central Carolina Hospital, 1135 Carthage Street, Sanford, NC 27330. 919/774-4100, ext. 394

November 1
"Malpractice Awareness — Stat"
Place: Charlotte
Info: Wayne Parker, Medical Mutual Insurance Company, Box 27444, Raleigh, NC 27611. 919/828-9334

November 16
"Antibiotics and Infectious Disease"
Place: Sanford
Credit: 3.5 hours Category 1
Info: Robert S. Cline, M.D., Central Carolina Hospital, 1135 Carthage Street, Sanford, NC 27330. 919/774-4100, ext. 394

November 30-December 3
"35th Annual Scientific Assembly"
Place: Greensboro
Credit: 16 hours AAFP
Info: NC Academy of Family Physicians, Box 20146, Raleigh, NC 27619. 919/781-6467

Out of State

May 4-7
"64th Annual Meeting, The Virginia Society of Ophthalmology and Otolaryngology, Inc."
Place: Charlottesville, VA
Info: Donna Strawderman, 4205 Dover Road, Richmond, VA 23221. 804/353-2721

May 6-8
"Regional Postgraduate Course"
Place: Lexington, KY
Fee: $15/hour SMA members, $22.50/hour nonmembers
Info: Jeanette Stone, Southern Medical Association, Box 2446, Birmingham, AL 35201. 205/323-4400

May 11
"Interpreting the Medical Literature"
Place: Johnson City, TN
Credit: 3.5 hours
Info: Sue Hutchinson, College of Medicine, East Tennessee State University, Johnson City, TN. 615/928-6426, ext. 204

May 13-15
"Abdominal Imaging"
Place: Hilton Head Island, SC
Fee: $300 ($200 residents and fellows)
Credit: 20 hours
Info: W. B. Wood, M.D., 231 MacNider 202H, UNC School of Medicine, Chapel Hill, NC 27514. 919/962-2118

May 18
"Interpreting the Medical Literature"
Place: Morristown, TN
Credit: 3.5 hours
Info: Sue Hutchinson, College of Medicine, East Tennessee State University, Johnson City, TN. 615/928-6426, ext. 204

May 25
"Interpreting the Medical Literature"
Place: Big Stone Gap, VA
Credit: 3.5 hours
Info: Sue Hutchinson, College of Medicine, East Tennessee State University, Johnson City, TN. 615/928-6426, ext. 204

June 10-12
"Practical Dermatology for the Non-Dermatologist"
Place: Williamsburg, VA
Info: W. B. Wood, M.D., 231 MacNider 202H, UNC School of Medicine, Chapel Hill, NC 27514. 919/962-2118

June 16-19
"Dermatology for the Non-Dermatologist"
Place: Myrtle Beach, SC
Fee: $325 ($175 residents and interns)
Credit: 15 hours AMA
Info: Angelika Langen, Box 3135, Duke University Medical Center, Durham, NC 27710. 919/684-5337

July 4-9
"Midsummer Family Practice Digest"
Place: Myrtle Beach, SC
Credit: 30 hours AAFP
Info: NC Academy of Family Physicians, Box 20146, Raleigh, NC 27619. 919/781-6467

July 19-23
"Sixth Annual Symposium on Contemporary Clinical Neurology"
Place: Hilton Head Island, SC
Info: Joan Sullivan, Department of Neurology, Vanderbilt University School of Medicine, Nashville, TN 37212.

July 31-August 4
"Duke University Trauma Conference"
Place: Myrtle Beach, SC
Credit: 21 hours, AMA, ACEP
Info: Rita Weber, R.N., Box 3869, Duke University Medical Center, Durham, NC 27710. 919/684-2237

August 1-5
"Eleventh Annual Beach Workshop"
Place: Myrtle Beach, SC
Fee: $200
Credit: 20 hours Category 1 AMA
Info: Emery C. Miller, M.D., Bowman Gray School of Medicine, Winston-Salem, NC 27103. 919/748-4450

The items listed in this column cover the six months immediately following publication. Requests for listing should be mailed to Patricia Hodgson, Managing Editor, *North Carolina Medical Journal*, P.O. Box 3910, Duke University Medical Center, Durham, NC 27710.

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CATAWBA

John Breckinridge Gorman (PS), 420 N. Center Street, Hickory 28601

CHOWAN-PERQUIMANS

John Christopher Perry (FP), P.O. Box 429, Edenton 27932

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News Notes

Duke University Medical Center

Medicine and industry have joined to create perhaps the first cancer publication that people will actually enjoy reading.

"Stay Healthy America! A new look at what you should know about cancer" provides vital information without a hint of gloom or doom, said Dr. Seymour Grufferman, director of the cancer prevention and control program at the Duke University Comprehensive Cancer Center. The project was supported by a grant from American Family Corporation of Columbus, GA.

The full-color, 36-page booklet answers questions such as:

* What is cancer?
* What is the most important step people can take to reduce their risk of cancer?
* Should I change my diet to reduce my risk of cancer?
* Does coffee cause cancer? Should I stop drinking it?
* How often should I see my physician for a checkup?
* Someone in my family has cancer. Do I stand a greater chance of getting the disease?

The booklet was written by Grufferman, who has a doctorate in public health from Harvard, as well as an MD degree, and was edited for laymen by Arthur Fisher, science editor of *Popular Science* magazine.

Copies of "Stay Healthy America!" are available at cost ($2.00) by writing to Cancer Booklet, Box 3958, Duke University Medical Center, Durham, NC 27710.

A new national toll-free number for the country's Cancer Information Services is now working in North Carolina: 1-800-4-CANCER.

Dr. Diane McGrath, director of cancer education and communication with the Duke University Comprehensive Cancer Center, said the new number "should make it easier for us to help North Carolinians since it is so easy to remember. When people try to recall what number to dial for cancer information, we hope they will remember 1-800-4-CANCER."

The Cancer Information Service at Duke receives about 800 calls a month, she said. The service's phones are answered by specially trained counselors between 8:30 a.m. and 4:30 p.m. weekdays. At other times, callers can leave their name and number on an answering device; a counselor from the service will call back the next working day.

"We have information about services available for cancer patients and their families in each of the 100 counties in North Carolina," McGrath said.

The Duke Cancer Information Service is part of a network of 17 such services funded by the National Cancer Institute, the federal government's cancer research and education agency.

In spite of public awareness campaigns and child-proof caps on medicine bottles, the incidence of childhood poisoning in the United States is on the rise, according to the director of the Duke Poison Control Center.

"We've seen a decline in the number of children who accidentally take overdoses of aspirin and other medications, but the number of toxic household chemicals in the average home has increased, and so has the rate of accidental poisonings," said Dr. Shirley Osterhout.

The Duke Poison Control Center has been providing emergency medical advice to the public since 1954. Its toll-free number is 1-800-672-1697.

Among recent trends, Osterhout said, the incidence of poisoning related to houseplants has increased dramatically over the past few years. "Children usually do more harm to houseplants than the plants do to them, but it's best to urge parents to keep the plants out of reach and tell their children not to put any part into their mouths," she said.

The Poison Control Center advises families with young children to have syrup of ipecac in the house. "It is recommended in the event of certain kinds of poisoning to induce vomiting. Syrup of ipecac is effective, relatively inexpensive and can be bought at most drug stores without a prescription. But it should be used only if the doctor or poison control center suggests it."

A free brochure titled "Poison At Work" is available by sending a stamped, self-addressed envelope to the Duke Poison Control Center, Duke University Medical Center, Box 3007, Durham, NC 27710. A 10-minute slide/tape program is also available for loan to groups.

Helping physicians at Duke, in the community and in surrounding states keep up with the mountain of new medical information is the job of Duke's Office of Continuing Medical Education.

Duke awards CME credit hours for attendance at medical lectures, seminars, workshops, grand rounds and other meetings that take place at the medical center or are coordinated through Duke and held elsewhere.

Program director Dr. Harry Gallis said his office would like to hear from physicians about ideas for CME topics that would be of particular interest and usefulness to them. Write to him at Box 3306, Duke University Medical Center, Durham, NC 27710, or call 919/684-6485.

Only a few years ago, the outlook for people diagnosed as having adult acute leukemia was dim. Only five to 10 percent survived more than five years, said Dr. Andrew Huang, director of Duke's bone marrow transplantation program and a member of the Duke Comprehensive Cancer Center.

But today, by treating the disease with a bone marrow transplant, the survival rate can be increased to 50 percent or better, Huang said.

Two types of bone marrow transplants can be done on leukemia patients after they undergo radiation and drug therapy to destroy their diseased bone marrow cells. With either type, the best results are obtained when the transplant is done with the disease in remission, Huang said.

One type of transplant of bone marrow cells is from the patient's identical twin, or a brother or sister with matching bone marrow. But when the sibling's bone marrow is used, there is a risk that the patient's body will reject the bone marrow graft, or vice versa.

The second type of transplant, still under study, is a transplant from the patient himself. With this method, the cells are removed from the patient before radiation and chemotherapy, while the disease is in remission. The cells are sometimes further treated with a technique using monoclonal antibodies to kill any cancer cells that may be present. Then the patient's marrow is frozen for later use.

Duke was the first medical center in the Southeast to use the freezing technique, Huang said.

With stomach ulcers, it's not what you eat that counts, but what eats you, says a Duke gastroenterologist.

"Milk and cream are good antacids and may make you feel better temporarily, but like any food, no matter how bland, they stimulate the stomach to produce acid and pepsin, the main cause of peptic ulcers," said Dr. John T. Garbutt, associate professor of medicine.

"We're not certain why it happens, but for some reason part of the stomach loses its natural resistance to acid and literally begins to digest itself," he said. Other factors involved include heredity, stress, medications like aspirin, alcohol and tobacco.

Improvements in diagnosis and treatment have reduced the complications associated with peptic ulcers, he said, but the incidence is still high. One in every 10 men in the United States, and an increasing number of women, can expect to have an ulcer at some time during their lives.

The endoscope, a lighted tube through which the upper gastrointestinal tract can be seen, has given doctors a 90 percent accuracy rate in diagnosing ulcers, Garbutt said.

Ulcers can be healed in two to six weeks with appropriate treatment, he said. Unfortunately, three out of four may recur unless an individual eliminates those elements of his or her lifestyle that contribute to ulcers.

Treatments include high doses of over-the-counter antacids to various prescription drugs. In recent years, new medications have been developed that block the production of acid in the stomach, and researchers at Duke are testing synthetic prostaglandins, which are naturally occurring chemicals that make the lining of the stomach stronger and more resistant to acids. "The research has been encouraging and could lead to the development of better drugs in the future," Garbutt said.

Recombinant DNA studies underway at Duke University Medical Center may lead to a new diagnostic test for myotonic muscular dystrophy, a debilitating hereditary disease.

DNA, or deoxyribonucleic acid, is the part of a gene that carries the genetic code of each individual.

"Our recombinant DNA strategy is to obtain a diagnostic test for people who carry the gene but don't have the symptoms yet," said Dr. Allen Roses, chief of the division of neurology.

"Many people with the disease are not diagnosed and the onset of symptoms can occur after they have already had their families. Our goal is to find a diagnostic test to identify people who carry the genes and to develop treatments," he said.

Roses said myotonic dystrophy can occur as a fatal illness in a newborn, a cardiac arrhythmia in a 40-year-old or a specific type of cataracts in a 60-year-old. It affects not only muscles, but many other systems of the body.

To carry out recombinant DNA studies on a particular disease, Roses said a physician must have available a large number of cooperative patients with the disease. This is necessary, he added, because many blood samples are needed from family members who have the symptoms of the disease, along with those who don't, to test for genetic linkage.

Two Duke ophthalmologists are examining whether the drug acyclovir can prevent the eye damage that may accompany facial shingles, which is caused by a zoster virus of the same type that causes chickenpox.

"It can affect different sections of the body, usually without spreading to others," said Dr. Michael Cobo, "but when it affects the area around the eye, it is especially serious because it may damage the eye itself."

Eye complications include scarring, corneal damage, inflammation and secondary glaucoma.

Facial shingles is one of the more common forms of the disease, Cobo said, occurring in about 20 percent of shingles patients. Cobo and Dr. Gary Foulks plan to enroll at least 20 patients in the study.

Pelvic inflammatory disease affects an estimated 900,000 women in the United States each year and costs the U.S. economy nearly $3 billion annually.

Three Duke physicians are heading a study of women with PID in central North Carolina. They will investigate the causes and diagnosis of the disease, which infects and damages the delicate tissues of the fallopian tubes and can cause chronic pelvic pain, sterility and increased likelihood of ectopic (tubal) pregnancies.

"Data suggest that 15 percent of the reproductive-aged women in the U.S. have had PID," said Dr. Charles

Livengood, assistant professor of ob-gyn, "but only about one-fourth of them suffer any long-term complications."

Researchers Livengood, Gale Hill and Allen Addison in the department of obstetrics and gynecology will study 110 patients who have been diagnosed with PID.

"The microbiology of PID will be one of the most critical issues in this study," Hill said, "and may lead us to the causes. We want to take a close look at non-gonococcal cases of PID, which commonly involve aerobic and anaerobic bacteria." Other factors that may contribute to PID are chlamydia and mycoplasma, two sexually-transmitted cervical infections, and intrauterine devices.

Dr. Joseph C. Greenfield Jr., James B. Duke Professor of Medicine, has been appointed chairman of the Department of Medicine at Duke University Medical Center.

In addition to his new duties, he will continue as chief of Duke's division of cardiology. Greenfield earned his medical degree at Emory University School of Medicine in 1956 and came to Duke for his internship and residency in medicine.

He was described by Dr. Andrew G. Wallace, who preceded him as chief of cardiology, as a strong teacher, an excellent clinical cardiologist and one of the nation's authorities in cardiac physiology.

East Carolina University School of Medicine

Dr. H. Thomas Norris has been named professor and chairman of the newly established Department of Clinical Pathology and Diagnostic Medicine.

Norris assumed his duties April 1. He came to ECU from the University of Washington School of Medicine in Seattle where he was professor of pathology and director of University Hospital's anatomic pathology services. He also has held faculty appointments at Tufts University School of Medicine and Boston University School of Medicine.

The new department will be responsible for all laboratory services at the School of Medicine Outpatient Center and the Eastern Carolina Family Practice Center as well as all the lab services at Pitt County Memorial Hospital.

Norris' special area of research is gastrointestinal pathology and infectious diseases, especially human cholera. He is the author of *Pathology of the Colon, Small Bowel and Anus* to be published this year by Churchill Livingston Publishers of New York. The book is the second volume in the series, *Current Concepts in Surgical Pathology*.

Norris received his undergraduate degree from Washington State University and his medical degree from the University of Southern California-Los Angeles. He did his postgraduate training at Los Angeles County General Hospital, Boston City Hospital, Walter Reed Army Hospital Institute of Research, and Harvard Medical School.

The "Down East" community of Sea Level will be the site May 25-28 of an invitational conference on geriatric medicine, "Elder Care: A Practical Update for Primary Care Physicians."

The conference will be sponsored by the ECU School of Medicine, Duke University Medical Center, Sea Level Hospital and Sailors' Snug Harbor in association with the Eastern Area Health Education Center.

The program will focus on clinical problems frequently encountered in the care of the elderly: osteoporosis, cancer, aging skin, stroke, cardiac medications, hypertension, diabetes, thyroid and other endocrine disorders, drug metabolism, medico-sociological aspects of aging, preoperative evaluation, mental-emotional disorders and incontinence. Twenty faculty members from ECU, Duke and UNC will participate on the program.

For more information call the ECU Office of Continuing Medical Education, 758-5200.

Dr. Loretta Kopelman, director of the medical school's humanities program, has been appointed to the advisory board of the *Journal of Medicine and Philosophy*.

Dr. Zubie W. Metcalf, director of the Center for Student Opportunities, has been named vice chairman of the Southern Regional Minority Affairs section of the Association of American Medical Colleges.

Dr. Irwin L. Blose, professor of psychiatric medicine, has been elected president of the American Medical Society of Alcoholism.

University of North Carolina School of Medicine North Carolina Memorial Hospital

The University of North Carolina at Chapel Hill received a five-year, $1,125,000 grant from the Cystic Fibrosis Foundation to conduct research into the basic cause of cystic fibrosis.

The grant, which was awarded at a luncheon attended by Governor James B. Hunt, is from the foundation's research development program. The University is only the second institution in the country to receive a grant to establish a cystic fibrosis research center.

Dr. Philip Bromberg, professor of medicine and chief of the division of pulmonary diseases, has been named director of the CF research center.

The UNC research team, headed by Bromberg and Dr. Richard Boucher Jr., associate professor of medicine, received national attention last year when it discovered an important clue to the cause of the thick mucus that clogs the lungs of people with CF.

These studies linked, for the first time, the dry sticky mucus and extra salt in sweat of people with CF to abnormalities in the epithelia — cells that line various tubes in the body.

These findings closely parallel other activities that suggest decreased chloride movement through epithelial cells is the major defect in CF sweat gland ducts, which produce excessive salt.

The CF Foundation grant is for UNC-CH scientists to study precisely how chloride moves through cells and to further study the role of amiloride and similar drugs to counteract adverse effects.

Going to the hospital can be a frightening experience for

both children and their parents but reading a book together is a good way to get ready. That's the advice of pediatric recreation therapists at North Carolina Memorial Hospital. They have prepared a list of good books written for children about going to the hospital which are available at most area libraries.

"Preparing for a hospitalization is important because it allows the child to know what to expect and thus be better able to deal with different situations," explained Dot Williford, a pediatric recreation therapist. "Coping successfully with a hospital stay can be a positive and growing experience for both parents and their children."

Williford encouraged parents to be familiar with the information in a book before they read it with their child. "Parents usually know their children better than anyone and can determine the type and level of information they can most readily understand.

"Parents may want to adapt information to their child's particular experience and needs," she continued. "It is also important for parents to check with their doctor to find out if there is any special information they should share with the child."

Williford said there is no rule about when to begin preparing a child for a hospital stay but advised against doing it too far in advance.

Williford encouraged parents to concentrate on building a sense of trust with their children. "Never threaten children with the doctor or tell them they will get a shot if they misbehave. Children should be taught that medical personnel are friends who can help them."

Williford said pediatric recreation therapists at NC Memorial work with children and their parents both before and after an operation to help answer their questions and relieve some of their anxieties.

"It's important for parents and children to realize that it's okay to be anxious," she said. "We try to help them accept this and do what we can to meet each child's needs."

To obtain a free copy of the booklet, "Going to the Hospital . . . Read to Get Ready," call 966-2301.

More than $1 million in federal grants has been awarded to the Frank Porter Graham Child Development Center to continue two major early childhood research programs initiated at the center in 1972 and 1977.

The programs investigate types of education to enhance the academic and personal development of young children and their families. Director of both programs is Dr. Craig T. Ramey, FPG director of research and research professor of psychology.

The Carolina Abecedarian Project will receive $807,134 over the next four years from the National Institute of Child Health and Human Development to study innovative educational programs for children from infancy through age 7. One of these programs involves use of the home-resource teacher to act as liaison between home and school by

working with the child's parents and classroom teachers.

Project CARE (Carolina Approach to Responsive Education) has received $228,903 from the Department of Education to compare the effects of two programs on children and their families during the preschool years. One program involves daycare and parent education via home visits, and the other involves daycare and parent discussion groups.

The 30 month CARE grant extends from January 1, 1983 until June 30, 1985.

Physicians at North Carolina Memorial Hospital have improved substantially the success rate for kidney transplants in children by giving them a series of preoperative blood transfusions from the parent who is donating the kidney.

This donor specific transfusion (DST) technique, performed at Chapel Hill in a cooperative study with several Southeastern centers, has improved dramatically the success of transplantation, according to Dr. Richard Morris, associate professor of pediatrics in the School of Medicine.

Morris is a member of a kidney transplant team which includes Dr. Stanley Mandel, professor of vascular surgery, and Dr. James Mandell, assistant professor of surgery and pediatrics.

Morris explained that the DST technique is more important to children than adults because it is used when transplantation is performed between related persons whose tissue types are haploidentical or half alike. "Previous results with this kind of transplantation were not as good as when a child received a transplant from a brother or sister with an identical tissue type," he said. "But the results with haploidentical transplantation after DST are essentially identical to those when a sibling transplant is performed."

Morris added that children seldom have siblings old enough to donate a kidney so improving the success of transplantations from parents is particularly important.

Sensitization is the most significant disadvantage of the DST technique. Morris said approximately one-third of children receiving transfusions prior to a planned transplant operation will have a reaction to the blood that may be similar to a rejection reaction. When this occurs, the transplant is not performed.

"The reason the DST technique decreases rejection is not known," Morris said, "but most centers in the United States are employing it extensively with encouraging results.

"The children we have transplanted here using the technique feel well, are attending school regularly and are performing well academically. Most are extensively involved in extracurricular activities," he continued. "If this experience continues, the outlook for children with chronic renal disease will have improved substantially."

A clinical trial underway at the University of North Carolina School of Medicine is seeking patients with reflux esophagitis. Please contact Drs. Michael Steckman, Eugene Bozymski or Roy Orlando at 919/966-2511.

The Bowman Gray School of Medicine Wake Forest University

A drug developed to combat genital herpes infections has been found to slow the growth of some animal cancer cells. The finding comes from research over the past three years by Dr. Louis S. Kucera, a virologist at the Bowman Gray School of Medicine.

The drug, Zovirax, is made by the Burroughs Wellcome Co. in the Research Triangle Park.

Zovirax was found to significantly reduce the size of tumors growing in rats. The tumor cells had been changed from normal cells to cancer cells by the herpes simplex type two virus, the same virus responsible for genital herpes infections.

It has been known for several years that herpes is capable of transforming normal cells to cancer cells. It is not known whether Zovirax would have any effect on human cancer cells.

Kucera considers the research important because it provides further evidence that there are peculiarities in cancer cells against which anti-cancer drugs can be aimed. The peculiarity in herpes-infected cells is an enzyme, thymidine kinase, which changes Zovirax from an inactive to an active drug.

The same enzyme was found by Kucera to be present in animal cancer cells which had been transformed from normal cells by the herpes virus.

Following work with cells in tissue cultures, Kucera implanted cancer cells transformed by the herpes virus into rats. A day later, some of the rats were treated with Zovirax while the remaining rats were untreated and kept for comparison. After ten days, the size of the mouse tumors in both groups were measured.

"We found significantly smaller tumors in those rats treated with Zovirax," Kucera explains.

A study done at the Bowman Gray School of Medicine shows that interferon has some effectiveness against multiple myeloma, a bone marrow cancer.

But the director of the study, Dr. M. Robert Cooper, cautions that the study in no way indicates that interferon is a cure for the cancer.

"Interferon appears to be the first new agent that shows some promise in the treatment of multiple myeloma," Cooper explains.

Nine patients, all of whom had received the standard treatments for multiple myeloma but were no longer responding to those treatments, were treated with interferon.

Three of the nine responded to the new treatment. Response was characterized as causing a greater than 50 percent reduction in the quantity of immunoglobulin, a protein produced by the cancer. The treatment also had to reduce the pain experienced by the patients in their bones.

While helping to reduce pain, the interferon did not appear to reduce the bone erosion which is part of the cancer's process. That is one of the reasons why Cooper thinks interferon will be most effective when used in combination with radiation, which inhibits the bone erosion, or with other treatments.

Cooper's study showed considerable side effects with high doses of interferon, including fever, chills and lethargy. The Bowman Gray study also showed that doses could be greatly reduced without a reduction in effectiveness. And smaller doses resulted in considerably fewer side effects.

This spring, Cooper will begin a follow-up study in conjunction with the Piedmont Oncology Association and the Norris Cotton Cancer Center at Dartmouth College Medical School. The hope in that follow-up study is to treat 75 to 100 myeloma patients, with an aim of obtaining a better idea of interferon's effectiveness.

A group of doctors at the Bowman Gray School of Medicine believes that patients can gain greater control of their asthma if the patient has an accurate way of measuring his pulmonary function throughout the day. To be able to do that would permit uncovering and treating an impending asthma attack even before the patient felt any symptoms.

To test that belief, Bowman Gray has received a $117,243 grant from the Robert Wood Johnson Foundation for a two-year research program. The research, which starts this summer, will involve specialists in pulmonary medicine, a psychologist and a statistician.

About half of the 150 asthma sufferers in the study will continue to handle their asthma as they always have. But the other half will be asked to use a device which accurately measures how well the respiratory system is working. The device is called a Mini-Wright Peak Flow Meter.

The meter will detect early deterioration in pulmonary function as the airways begin to constrict. Those in the study using the meter will regularly monitor pulmonary function and keep a record of meter readings. If, at any time, they need to call a doctor for assistance, they will have reliable information from the meter which the physician can use in evaluating the severity of an attack. Without that information, the doctor might need to see the patient to assess his condition.

At the conclusion of the study, doctors whose patients used the meter will be asked if they think patient use of the meter was an aid in the management of asthma.

The psychologist's involvement in the research involves looking for a correlation between those who successfully use the meter and a personality type of individual who feels in control of his life. Those who feel in control are thought to be more involved in caring for their health.

Four faculty members at Bowman Gray have received Faculty Foreign Travel Awards to support their participation in international meetings this summer.

The four are Dr. David A. Blizzard, associate professor of physiology, who has organized a symposium for the First International Meeting of the Behavior Genetics Association in London; and Dr. Jon C. Lewis, associate professor of pathology, who will take part in the Third International Austrian Atherosclerosis Conference in Vienna.

Also, Dr. David A. Stump, assistant professor of neurology (neuropsychology), who will participate in the 11th International Symposium on Cerebral Blood Flow and Metabolism in Paris; and Dr. Robert L. Wykle, research associate professor of biochemistry, who will take part in the First International Symposium on Platelet-Activating Factor and Structurally Related Ether Lipids in Paris.

Dr. Frank C. Greiss Jr., professor and chairman of the Department of Obstetrics and Gynecology, has been elected a member of the American Gynecological Club.

Dr. Charles L. Spurr, professor of medicine (hematology/oncology), has been elected chairman of the Ad Hoc Review Committee A for the Community Clinical Oncology Program of the National Cancer Institute.

North Carolina Names in the News

Growth was the key word at the recent annual meeting of Medical Mutual Insurance Company of North Carolina. Growth not only in such key areas as premiums written and policyholder's equity, but also in some less desirable areas such as claims made and suits filed.

In remarks delivered on March 12, 1983, at the Governor's Inn in the Research Triangle Park, **James E. Davis, M.D.**, President of the Company stated that: "Your company continued to grow and progress in 1982, although not necessarily prosper. In North Carolina as throughout the United States the number of claims and the dollar severity of these claims has continued to rise. On the brighter side, during the period 1978-1982, of the claims closed, 791 or 78% resulted in no loss payment. During the same period 217 or 22% of the total claims made against our insureds were paid. Of considerable significance, from the inception of Medical Mutual in 1975 through 1982 your company has paid only one suit as a result of a jury verdict against an insured physician."

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At the annual meeting, **John McCain, M.D.,** Treasurer of Medical Mutual, commented that: "Medical Mutual grew by some $1,500,000 during 1982 with premiums written of $8,267,000. With the increase in premiums and the resulting cash flow, Medical Mutual was able to increase its asset base over $4,500,000 to approximately $21,000,000 at year end. Of importance to our policyholders and guaranty capital holders is the fact that we now have some $3,362,000 in policyholder's equity."

In concluding remarks, **Douglass M. Phillips,** Executive Vice-President, stated that: "Although there clearly are challenges facing us during 1983 and in the coming years the future looks bright because your Board is willing to assume a leadership role in the field of physician professional liability."

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Letters to the Editor

To the Editor: I read with interest the article by Ralph J. Caruana, M.D. et al. on acute rhabdomyolysis associated with an overdose of lorazepam, perphenazine and amitriptyline (January 1983; 44:18-19). The article was useful, and I was impressed by the authors' attempt to offer a complete list of the causes of acute rhabdomyolysis. Even though metabolic causes were listed in table 1 of the article, I think that it should be clearly stated that hyperventilation and hysteria can and may cause respiratory alkalosis induced hypophosphatemia, hemolytic anemia, metabolic encephalopathy and rhabdomyolysis.[1, 2] I have seen one documented case of this entity in my own practice.

Other causes of profound hypophosphatemia and possible rhabdomyolysis are alcoholic withdrawal, diabetes mellitus, pharmacologic phosphate binding, recovery/diuretic phase after severe burns, "hyperalimentation," "nutritional recovery syndrome," and severe respiratory alkalosis including intense hyperventilation driving serum phosphorus to 0.5 mg/100 ml.[3-6]

Another cause of rhabdomyolysis commonly reported in Algeria[7] and Greece[8] is quail poisoning which causes muscle stiffness, pain and muscular weakness in conjunction with myoglobinuria.[9] Quails are probably carriers of an unknown toxic agent that causes rhabdomyolysis.

Assad Meymandi, M.D.
1212 Walter Reed Road
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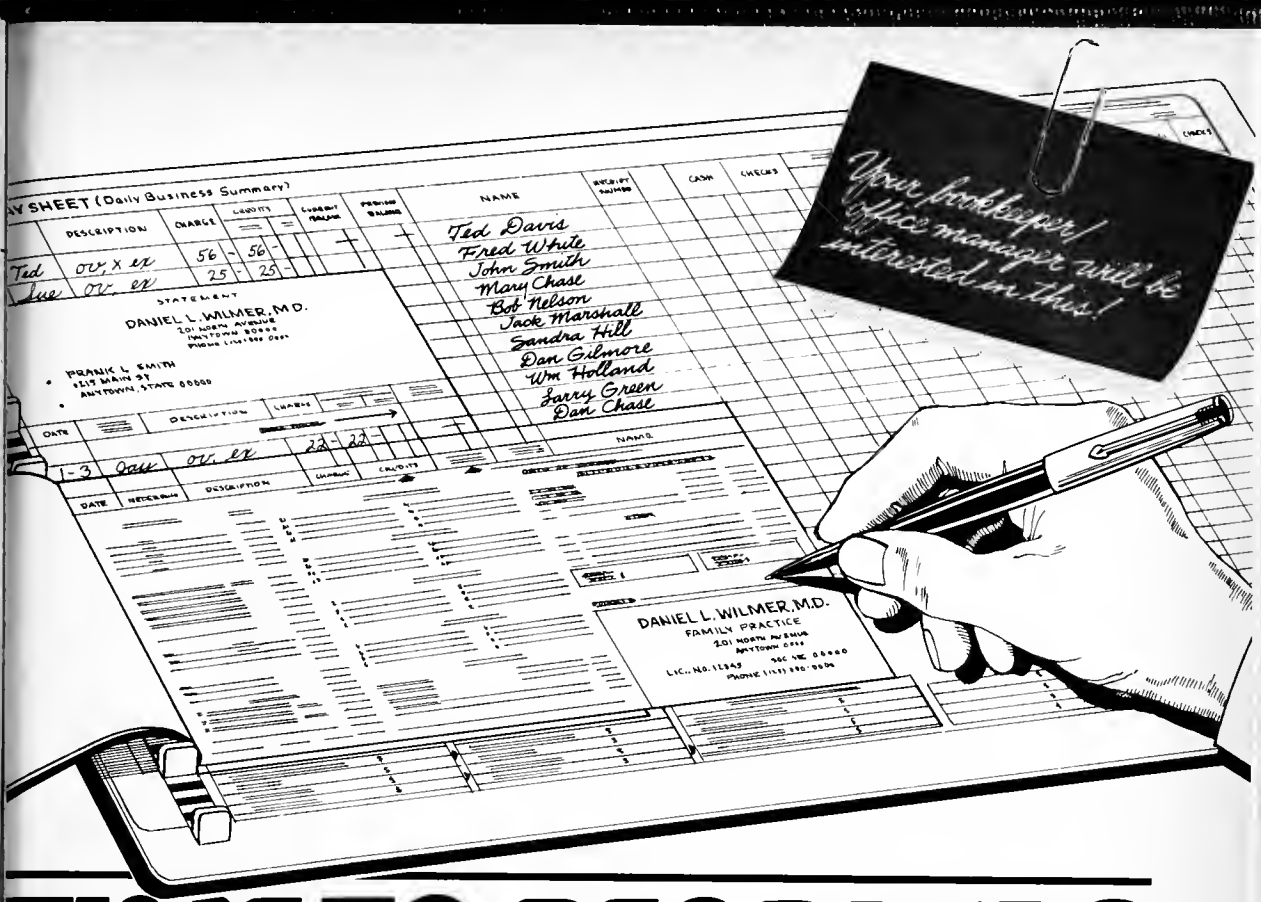

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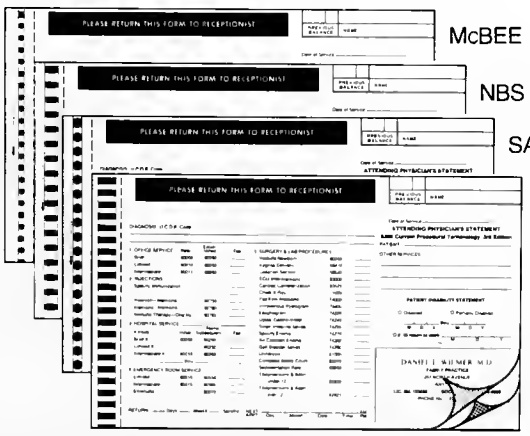

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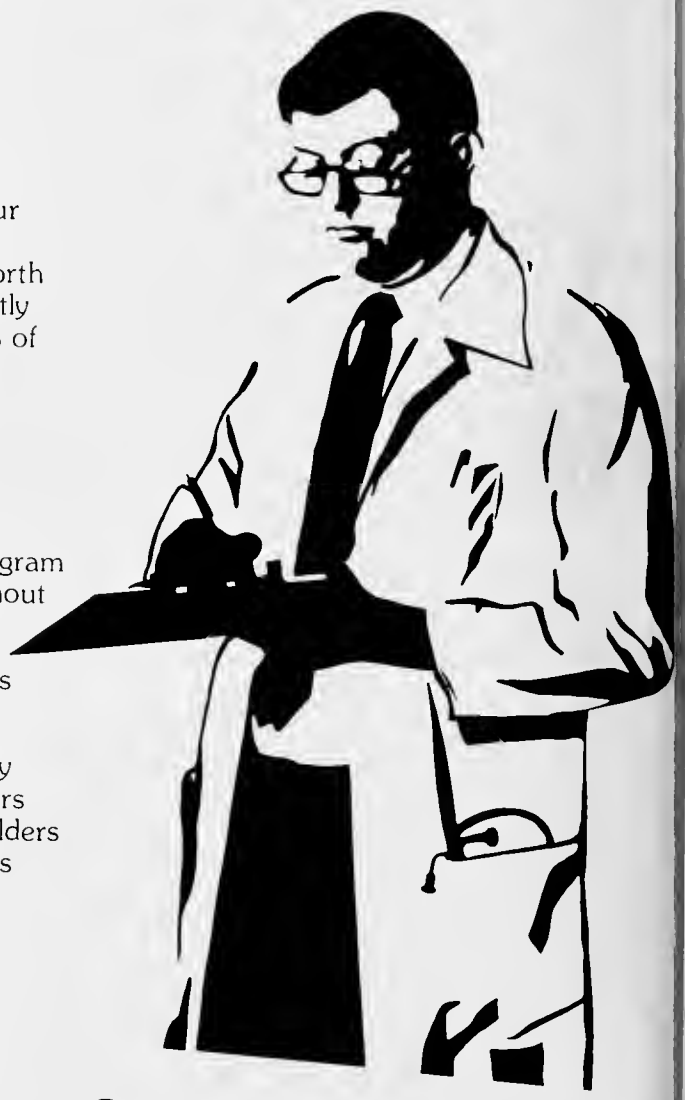

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June 1983, Volume 44, No. 6

Menopause by Eleanor B. Easley, M.D.

Women can go through it and remain active, healthy, and happy. Important facts for them and physicians who treat them . . . page 369

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Indications: Management of anxiety disorders, or short-term relief of symptoms of anxiety. Anxiety or tension associated with the stress of everyday life usually does not require treatment with an anxiolytic. Symptomatic relief of acute agitation, tremor, impending or acute delirium tremens and hallucinosis due to acute alcohol withdrawal; adjunctively in relief of skeletal muscle spasm due to reflex spasm to local pathology, spasticity caused by upper motor neuron disorders, athetosis, stiff-man syndrome. *Oral forms* may be used adjunctively in convulsive disorders, but not as sole therapy. *Injectable form* may also be used adjunctively in status epilepticus, severe recurrent seizures, tetanus, anxiety, tension or acute stress reactions prior to endoscopic/surgical procedures, cardioversion.

The effectiveness of diazepam in long-term use, that is, more than 4 months, has not been assessed by systematic clinical studies. The physician should periodically reassess the usefulness of the drug for the individual patient.

Contraindications: Tablets or capsules in children under 6 months of age; known hypersensitivity; acute narrow angle glaucoma; may be used in patients with open angle glaucoma who are receiving appropriate therapy.

Warnings: As with most CNS-acting drugs, caution against hazardous occupations requiring complete mental alertness (*e.g.*, operating machinery, driving). Withdrawal symptoms similar to those with barbiturates and alcohol have been observed with abrupt discontinuation, usually limited to extended use and excessive doses. Infrequently, milder withdrawal symptoms have been reported following abrupt discontinuation of benzodiazepines after continuous use, generally at higher therapeutic levels, for at least several months. After extended therapy, gradually taper dosage. Keep addiction-prone individuals (drug addicts or alcoholics) under careful surveillance because of predisposition to habituation/dependence.

> *Usage in Pregnancy*: Use of minor tranquilizers during first trimester should almost always be avoided because their use is rarely a matter of urgency and because of increased risk of congenital malformations, as suggested in several studies. Consider possibility of pregnancy when instituting therapy; advise patients to discuss therapy if they intend to or do become pregnant.

ORAL: Advise patients against simultaneous ingestion of alcohol and other CNS depressants.

Not of value in treatment of psychotic patients, should not be employed in lieu of appropriate treatment. When using oral forms adjunctively in convulsive disorders, possibility of increase in frequency and or severity of grand mal seizures may require increase in dosage of standard anticonvulsant medication; abrupt withdrawal in such cases may be associated with temporary increase in frequency and or severity of seizures.

INJECTABLE: *To reduce the possibility of venous thrombosis, phlebitis, local irritation, swelling and, rarely, vascular impairment when used IV: inject slowly, taking at least one minute for each 5 mg (1 ml) given, do not use small veins, i.e., dorsum of hand or wrist, use extreme care to avoid intra-arterial administration or extravasation. Do not mix or dilute with other solutions or drugs in syringe or infusion flask. If it is not feasible to administer Injectable Valium directly IV, it may be injected slowly through the infusion tubing as close as possible to the vein insertion.*

Administer with extreme care to elderly, very ill, those with limited pulmonary reserve because of possibility of apnea and or cardiac arrest, concomitant use of barbiturates, alcohol or other CNS depressants increases depression with increased risk of apnea, have resuscitative facilities available. When used with narcotic analgesic eliminate or reduce narcotic dosage at least 1/3, administer in small increments. Should not be administered to patients in shock, coma, acute alcoholic intoxication with depression of vital signs.

Has precipitated tonic status epilepticus in patients treated for petit mal status or petit mal variant status. Not recommended for OB use.

Efficacy/safety not established in neonates (age 30 days or less), prolonged CNS depression observed. In children, give slowly (up to 0.25 mg/kg over 3 minutes) to avoid apnea or prolonged somnolence, can be repeated after 15 to 30 minutes. If no relief after third administration, appropriate adjunctive therapy is recommended.

Precautions: If combined with other psychotropics or anticonvulsants, carefully consider individual pharmacologic effects—particularly with known compounds which may potentiate action of diazepam, *i.e.*, phenothiazines, narcotics, barbiturates, MAO inhibitors and antidepressants. Protective measures indicated in highly anxious patients with accompanying depression who may have suicidal tendencies. Observe usual precautions in impaired hepatic function, avoid accumulation in patients with compromised kidney function. Limit oral dosage to smallest effective amount in elderly and debilitated to preclude ataxia or oversedation (initially 2 to 2½ mg once or twice daily, increasing gradually as needed and tolerated).

The clearance of diazepam and certain other benzodiazepines can be delayed in association with Tagamet (cimetidine) administration. The clinical significance of this is unclear.

INJECTABLE: Although promptly controlled, seizures may return, readminister if necessary, not recommended for long-term maintenance therapy. Laryngospasm, increased cough reflex are possible during peroral endoscopic procedures, use topical anesthetic, have necessary countermeasures available. Hypotension or muscular weakness possible, particularly when used with narcotics, barbiturates or alcohol. Use lower doses (2 to 5 mg) for elderly/debilitated.

Adverse Reactions: Side effects most commonly reported were drowsiness, fatigue, ataxia. Infrequently encountered were confusion, constipation, depression, diplopia, dysarthria, headache, hypotension, incontinence, jaundice, changes in libido, nausea, changes in salivation, skin rash, slurred speech, tremor, urinary retention, vertigo, blurred vision. Paradoxical reactions such as acute hyperexcited states, anxiety, hallucinations, increased muscle spasticity, insomnia, rage, sleep disturbances and stimulation have been reported, should these occur, discontinue drug.

Because of isolated reports of neutropenia and jaundice, periodic blood count, liver function tests advisable during long-term therapy. Minor changes in EEG patterns, usually low-voltage fast activity, observed in patients during and after diazepam therapy are of no known significance.

INJECTABLE: Venous thrombosis/phlebitis at injection site, hypoactivity, syncope, bradycardia, cardiovascular collapse, nystagmus, urticaria, hiccups, neutropenia. In peroral endoscopic procedures, coughing, depressed respiration, dyspnea, hyperventilation, laryngospasm/pain in throat or chest have been reported.

Dosage: Individualize for maximum beneficial effect.

ORAL: *Adults*: Anxiety disorders, relief of symptoms of anxiety—Valium (diazepam/Roche) tablets, 2 to 10 mg b.i.d. to q.i.d.; or 1 or 2 Valrelease capsules (15 to 30 mg) daily. Acute alcohol withdrawal—tablets, 10 mg t.i.d. or q.i.d. in first 24 hours, then 5 mg t.i.d. or q.i.d. as needed; or 2 capsules (30 mg) the first 24 hours, then 1 capsule (15 mg) daily as needed. Adjunctively in skeletal muscle spasm—tablets, 2 to 10 mg t.i.d. or q.i.d.; or 1 or 2 capsules (15 to 30 mg) once daily. Adjunctively in convulsive disorders—tablets, 2 to 10 mg b.i.d. to q.i.d.; or 1 or 2 capsules (15 to 30 mg) once daily.

Geriatric or debilitated patients: Tablets—2 to 2½ mg 1 or 2 times daily initially, increasing as needed and tolerated (see Precautions). Capsules—1 capsule (15 mg) daily when 5 mg oral Valium has been determined as the optimal daily dose.

Children: Tablets—1 to 2½ mg t.i.d. or q.i.d. initially, increasing as needed and tolerated (not for use in children under 6 months). Capsules—1 capsule (15 mg) daily when 5 mg oral Valium has been determined as the optimal daily dose (not for use in children under 6 months).

INJECTABLE: Usual initial dose in older children and adults is 2 to 20 mg I.M. or I.V. depending on indication and severity. Larger doses may be required in some conditions (tetanus). In acute conditions injection may be repeated within 1 hour, although interval of 3 to 4 hours is usually satisfactory. Lower doses (usually 2 to 5 mg) with slow dosage increase for elderly or debilitated patients and when sedative drugs are added. (See Warnings and Adverse Reactions.)

For dosages in infants and children see below; have resuscitative facilities available.

I.M. use: by deep injection into the muscle.

I.V. use: inject slowly, take at least one minute for each 5 mg (1 ml) given. Do not use small veins, i.e., dorsum of hand or wrist. Use extreme care to avoid intra-arterial administration or extravasation. Do not mix or dilute Valium with other solutions or drugs in syringe or infusion flask. If it is not feasible to administer Valium directly I.V., it may be injected slowly through the infusion tubing as close as possible to the vein insertion.

Moderate anxiety disorders and symptoms of anxiety, 2 to 5 mg I.M. or I.V., and severe anxiety disorders and symptoms of anxiety, 5 to 10 mg I.M. or I.V., repeat in 3 to 4 hours if necessary; acute alcohol withdrawal, 10 mg I.M. or I.V. initially; then 5 to 10 mg in 3 to 4 hours if necessary. Muscle spasm, in adults, 5 to 10 mg I.M. or I.V. initially, then 5 to 10 mg in 3 to 4 hours if necessary (tetanus may require larger doses); in children *administer I.V. slowly*; for tetanus in infants over 30 days of age, 1 to 2 mg I.M. or I.V., repeat every 3 to 4 hours if necessary; in children 5 years or older, 5 to 10 mg repeated every 3 to 4 hours as needed. Respiratory assistance should be available.

Status epilepticus, severe recurrent convulsive seizures (I.V. route preferred), 5 to 10 mg adult dose administered slowly, repeat at 10- to 15-minute intervals up to 30 mg maximum. Repeat in 2 to 4 hours if necessary; keeping in mind possibility of residual active metabolites. Use caution in presence of chronic lung disease or unstable cardiovascular status. Infants (over 30 days) and children (under 5 years), 0.2 to 0.5 mg slowly every 2 to 5 min., up to 5 mg (I.V. preferred). Children 5 years plus, 1 mg every 2 to 5 min., up to 10 mg (slow I.V. preferred), repeat in 2 to 4 hours if needed. EEG monitoring may be helpful.

In endoscopic procedures, titrate I.V. dosage to desired sedative response, generally 10 mg or less but up to 20 mg (if narcotics are omitted) immediately prior to procedure, if I.V. cannot be used, 5 to 10 mg I.M. approximately 30 minutes prior to procedure. As preoperative medication, 10 mg I.M.; in cardioversion, 5 to 15 mg I.V. within 5 to 10 minutes prior to procedure. Once acute symptomatology has been properly controlled with injectable form, patient may be placed on oral form if further treatment is required.

Management of Overdosage: Manifestations include somnolence, confusion, coma, diminished reflexes. Monitor respiration, pulse, blood pressure; employ general supportive measures, I.V. fluids, adequate airway. Use levarterenol or metaraminol for hypotension. Dialysis is of limited value.

How Supplied:

ORAL: Valium scored tablets—2 mg, white; 5 mg, yellow; 10 mg, blue—bottles of 100 and 500; Prescription Paks of 50, available in trays of 10; Tel-E-Dose® packages of 100, available in trays of 4 reverse-numbered boxes of 25 and in boxes containing 10 strips of 10.

Valrelease (diazepam/Roche) slow-release capsules—15 mg (yellow and blue), bottles of 100, Prescription Paks of 30.

INJECTABLE: Ampuls, 2 ml, boxes of 10; Vials, 10 ml, boxes of 1, Tel-E-Ject® (disposable syringes), 2 ml, boxes of 10. Each ml contains 5 mg diazepam, compounded with 40% propylene glycol, 10% ethyl alcohol, 5% sodium benzoate and benzoic acid as buffers, and 1.5% benzyl alcohol as preservative.

ROCHE®

EDITORIAL

Psychosomatics

Francis A. Neelon, M.D.

PSYCHOSOMATICS!

How I hate that word! Somehow it seems piously self-congratulatory to declare that *some* medical conditions result from disorderly interaction of the central nervous system with the periphery (as though other or even most diseases were devoid of such interactions). Not that I doubt the existence of "psychosomatic" problems; to the contrary, I believe that any other kind of illness is amongst the rarest of medical conditions. My objection is that labeling some disorders as "psychosomatic" closes our minds to the place of the central nervous system in all ailments. Pigeonholing certain diseases only allows us to avoid the doctor's job: to try to understand the patient's problem and to help.

The words we use to name things are as important as the things themselves. Words after all are the stuff of thoughts. Mental pictures may represent a primitive form of thought but it is words (mental words I mean, "heard" inside our heads) that permit abstract and self-conscious thought — the very activity that distinguishes man from the birds, etc. Geschwind[1] has pointed out that the acquisition of language by humans coincided with the evolutionary advent of the angular gyrus (Wernicke's area) in the brain of man while Jaynes[2] has postulated that consciousness itself began with the consolidation of linguistic function into the left cerebral hemisphere. In any case, it does appear that words are intimately involved in the very process of being conscious; that "words" is one name we give to our self perception of our own mental processes.

The words we speak are shaped by the words we think. But it is just as true that the thoughts we think are formed by the words we have available to think with. The hypothesis that language determines thinking was first articulated by the distinguished American linguists Edward Sapir and Benjamin Lee Whorf as a result of their study of American Indian languages and culture.[3] I believe that they are correct: that how we speak shapes how we think. That is the reason it pains me to hear patients classified as being "really sick" or "just having some psychosomatic problem"; as having some "physical, organic disease" or "just a functional illness." If the body were transparent we would never talk of "mere psychosomatic problems"; if we could see within the abdomen there would be no "functional bowel disease" or "psychophysiologic gastrointestinal reactions." Sapir and Whorf warn us: we had better watch our tongues lest we begin to see the world the way we talk about rather than the way it is.

It is certain that there are medical dramas in which the central nervous system is the prime or sole actor, although sometimes in masquerade. It is also certain that, as physicians, we usually find patients with these ailments difficult to treat effectively. Quite possibly this results from the poverty of language we have available to think about such problems; possibly, from the lack of any easy or straightforward technological "solution" we can apply. Often we squander money and time in a fruitless search for some "objective" abnormality to treat,[4] even knowing in advance that our search is doomed to fail (or worse, to succeed and thereby misdirect our efforts to help the patient). When, belatedly, we try to retrace our steps to explore the social or emotional domain, we find the path blocked by the patient's veiled outrage at our inept handling of the case.[5, 6] Surely such patients need expert and multidimensional evaluation by specialists trained not to compartmentalize health care into "medical" or "psychiatric" packets. Elsewhere in this issue of the *Journal*, Stoudemire and his colleagues describe their new approach to the care of such patients. I have watched their Combined Medical Specialties Unit since its inception and been impressed by the talented team they have assembled to staff it. There is reason to hope that this unit's expressed values and integrated approach will allow Stoudemire et al to enlarge the vocabulary we have for thinking about and with our patients. That it will allow us to offer some help to the large group of patients whose symptoms defy simple descriptions; for whom, at present, words fail us.

From the Division of Endocrinology, Duke University Medical Center, Durham, NC 27710.

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Joint Conference Committee on Medical Care, Inc.

James Davis in his editorial on the Institute of Medicine for North Carolina (NCMJ, May 1983) states that this proposal originated in the North Carolina Joint Conference Committee on Medical Care, Inc. A rapid survey of everyone whose path I crossed demonstrated a paucity of knowledge about this "fathering committee."

In the days of the regional medical programs, Dr. Musser established a committee to advise him on the delivery of medical care in our state. With the demise of the regional medical program the members of this advisory committee decided in 1973 to incorporate under the name of The North Carolina Joint Conference Committee on Medical Care, Inc. Founding Fathers as of January 1, 1974 were:

William G. Anlyan, M.D.
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Duke University, Durham

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Private practitioner, Wilson

Christopher C. Fordham, III, M.D.
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President, North Carolina Blue Cross and Blue Shield, Inc., Durham

Cecil G. Sheps, M.D.
Vice Chancellor, Health Sciences
University of North Carolina, Chapel Hill

The articles of incorporation state that the existing members of the corporation may elect other persons. The basic purpose and principles of the incorporated organization are described as follows:

"The North Carolina Joint Conference Committee on Medical Care, Inc. is a voluntary, non-profit, non-private corporation whose purpose is to encourage in the public interest the development of an efficient and responsive system of medical care to which all citizens of North Carolina will have equal access at reasonable cost.

"Membership shall be composed of individuals who have demonstrated leadership and achievement in their association with major institutions, organizations, and agencies in North Carolina that are concerned with the education of medical manpower and with the organization, administration, financing, and provision of medical services.

"The purpose of the Joint Conference Committee will be accomplished through various ways, including:

1) The analysis of the existing medical care system, its resources and their relationships, and trends and forces affecting change.
2) The identification and assessment of deficits in the existing system and establishment of priorities among the medical needs of the state.
3) The encouragement of relevant research and demonstrations.
4) The dissemination of results of committee studies and recommendations through appropriate mechanisms.
5) The exertion of leadership inherent in its membership in the course of meeting their regular responsibilities.

"In carrying out its stated purpose, the Joint Conference Committee will utilize the full range of expertise existing in North Carolina to assure that its studies and recommendations represent the best possible judgment based on existing knowledge and a balanced concern for all important aspects of medical care as it affects the health of the citizens of North Carolina.

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This structure, with a meeting every other month, has provided a forum for communication between the members and has permitted the membership to have access to our governor, our state legislators, and to our senators and representatives in Washington on a more formal and structured basis than was possible previously. This corporation has no staff to execute policies thought desirable by the members. The North Carolina Medical Society has provided secretarial services to keep the minutes of meetings.

The legislature and the Medical Society have to decide to what extent they wish to accept the recommendation of this self-appointed group. The membership of 100 composing the proposed Institute of Medicine would to a large degree mirror that of this incorporated committee. The new organization would seek financing to support a staff capable of implementing programs while continuing the communication functions of the North Carolina Joint Conference Committee, Inc.

Eugene A. Stead, Jr., M.D.

What You Cannot Learn from Your Own Practice

Each patient selects doctors with experience to care for them. The more serious the problem the more they search for doctors who have knowledge obtained by experience. There are, however, many situations in which the results of our experience as physicians cannot define the likelihood of injury to our next patient. Experience is particularly likely to trip us up when the rate of complications is zero and the number of patients successfully treated is small. For example, if the complication rate from a series is 1 in 10,000, there is a 98% chance that no complication will be noted in treating 167 patients. If the complication rate is 1 in 200, there is a 43% chance that no complication will be noted in treating 167 patients.

This area of statistics is covered in an instructive paper by J. A. Hanley and A. Lippman-Hand entitled, "If Nothing Goes Wrong, Is Everything All Right?" (JAMA, April 1, 1983). When nothing goes wrong, the numerator is zero and the denominator is the number of patients observed. With what degree of confidence can we say that the true or long-run risk is between zero and some upper limit? To find the largest risk with which the finding of no complications in n number of patients is compatible, the authors use the "rule of 3" which states that if none of n patients shows the event about which we are concerned, one can be 95% confident that the chance of this event is at most three in n (i.e., 3/n). They give the following example:

"Of 14 boys followed up for a median of 5½ years after chemotherapy for leukemia, none had abnormal testicular function (i.e., the abnormality rate was 0/14). With what risk, if any, of testicular dysfunction might these results be compatible?"

Using the rule of 3 (3/n = 3/14) the maximum risk of abnormal testicular function from the chemotherapy is not greater than 21%.

The authors point out that a zero numerator may be observed in very diverse contexts:

". . . a new diagnostic test that has not yet misclassified a patient, a still-perfect surgical record, a field trial of a vaccine that uncovered no major side effects, an ophthalmology practice in which no patient with glaucoma was younger than 23 years, an airline that has never had a fatality. Thus, understanding the limits of the inference that can be made with such an observation is important."

Eugene A. Stead, Jr., M.D.

From the Department of Medicine, Duke University Medical Center, Durham, NC 27710.

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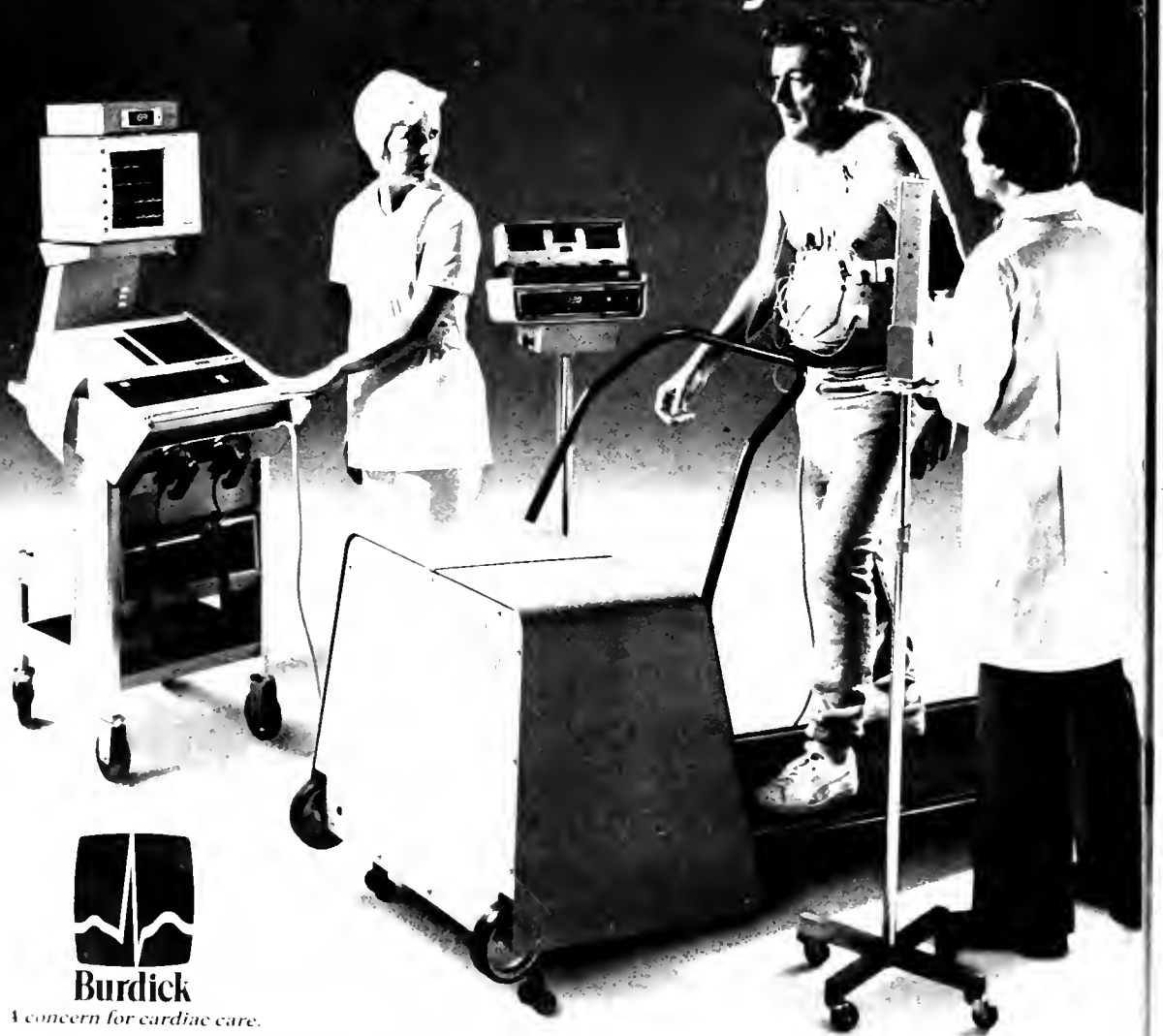

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SCIENTIFIC ARTICLE

Reye's Syndrome: Twenty Years in Perspective

Anthony R. Riela, M.D. and E. Steve Roach, M.D.

Historical Note on Reye-Johnson Syndrome

IN October 1963, *North Carolina Medical Journal* published a paper by George M. Johnson, Theodore D. Scurletis and Norma B. Carroll[1] presenting the clinical description of sixteen cases of a fatal encephalitis-like disease in North Carolina children (figure 1). Autopsy findings were presented in thirteen of these cases. This article, in conjunction with another article published the same month in *Lancet* by Reye, Morgan and Baral,[2] laid the groundwork for the description of a then newly recognized clinical entity, encephalopathy with fatty degeneration of viscera, or Reye-Johnson syndrome.

Most of the now well-recognized features of Reye-Johnson syndrome were described in the original reports. Characteristically, severe vomiting and deterioration of mental status developed in children recovering from a viral-like illness. A viral etiology was further suggested in several patients by the isolation of Echo 8 and Coxsackie-B_4 viruses from autopsy material. Many patients in both original series demonstrated elevation of the peripheral white blood cell count. Reye and his colleagues emphasized the elevation in serum SGOT and SGTT as an indicator of liver dysfunction, but the elevation in serum ammonia level that is so commonly seen in these patients was only later established. While the cerebrospinal fluid was typically normal, cerebrospinal fluid pleocytosis and neuropathologic findings suggested viral encephalitis in two of Johnson's original thirteen autopsied children. In the remaining eleven autopsied patients in Johnson's series, fatty degeneration of the liver and cerebral edema without marked cerebral inflammation were the predominant findings, with some patients also displaying fatty changes in the kidneys and heart.

Johnson, Scurletis and Carroll concluded their paper by writing, "it is our hope that others will share our experience, that this presentation will add to the literature, and that it may contribute to the eventual clarification of the etiology of such cases."[1] Their paper, along with that of Reye and colleagues, did in fact foster further work eventually resulting in a better understanding of the disorder. Now, based on this pioneering work, more is known about the diagnosis and management of the syndrome, and the outcome for patients with it has considerably improved. Our paper, which follows this note, presents many of the developments in the last twenty years of research, which have led to this improved outcome.

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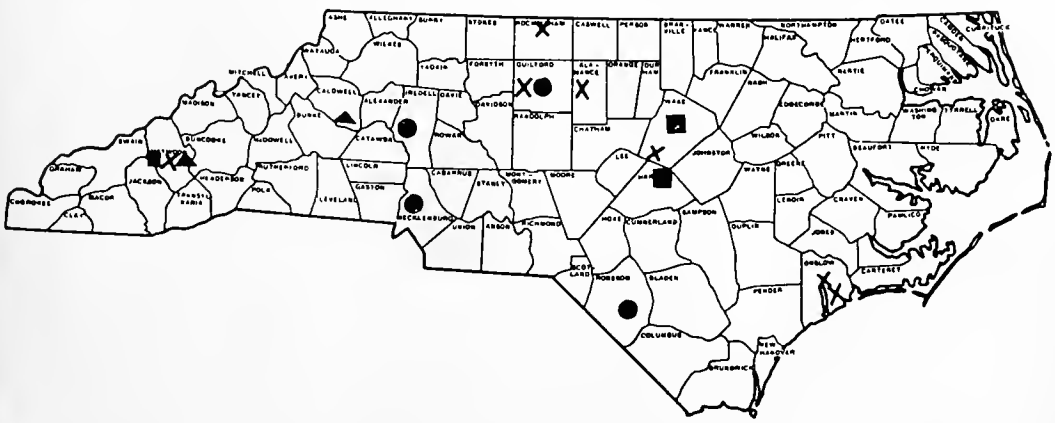

Figure 1. *Reproduced from the original paper by Johnson, Scurletis and Carroll showing the geographic location in North Carolina of their cases.* × *= January 1962,* ● *= February 1962,* ▲ *= March 1962,* ■ *= April 1962.*

REYE'S syndrome or encephalopathy with fatty degeneration of the viscera was initially believed to be rare. As awareness increased, however, the syndrome came to be recognized more frequently; current statistics indicate that it is one of the most common serious neurologic dysfunctions in childhood.

The disorder was first fully described in 1963, when it was simultaneously reported by George Johnson and associates in Raleigh in the *North Carolina Medical Journal*[1] and R. D. K. Reye and associates of Australia in *Lancet*.[2] Johnson described autopsy findings in 13 of his 16 cases from North Carolina which showed typical fatty infiltration of the liver. Reye's 21 cases were seen over a 12-year span and their clinical features and pathologic findings were fully described. A similar clinical entity was described by Brain[3] in 1929, with other scattered reports of similar cases throughout the literature. The full clinical and pathological description was not completed until 1963, and the entity has been known since then primarily as Reye's syndrome or, less commonly, as Reye-Johnson syndrome.

Clinically, this disease is seen in all age groups, although it is rare in both the newborn and adults. The most commonly affected patients are in the 5-15 year age group with a peak incidence at approximately 9 years of age. This syndrome commonly follows a viral illness, usually a respiratory infection, although a gastroenteritis can also be the presenting illness, especially in younger children. The exact etiology is still not known. Typically children begin recovering from a viral illness when they develop vomiting followed by nervous system dysfunction. Personality changes, irritability or agitation are early findings, with delirium, coma, seizures in later stages.

Clinical staging systems help describe the findings in patients who progress. The importance of clinical staging cannot be overlooked because it has led to a more uniform approach in management. Several staging systems have been described by Huttenlocher,[4] Lovejoy,[5] and others. At this time, Lovejoy's classification is more widely used. His staging has five divisions:

stage 1: vomiting, *lethargy* and sleepiness;
stage 2: *disorientation*, delirium and combativeness, hyperventilation, appropriate response to noxious stimuli, and hyperactive reflexes;
stage 3: *coma, decorticate rigidity*, hyperventilation, normal pupillary and oculocephalic reflexes;
stage 4: *deepening coma, decerebrate rigidity*, loss of oculocephalic reflexes (may be asymmetric), large fixed pupils that may demonstrate disconjugate eye movements with caloric testing;
stage 5: *flaccidity*, seizures, loss of tendon reflexes and respiratory arrest.

Lovejoy also used EEGs to help delineate the stages as a prognostic guide, but the EEG has not been shown to be a reliable predictor of outcome.

Multiple laboratory test results are abnormal in Reye's syndrome and are the basis for diagnosis and treatment. Most importantly, early in the illness there are elevations in the liver enzymes (SGOT/SGPT) and ammonia, as well as a decrease in glucose. This hypoglycemia is seen early especially in the younger age group. The liver enzymes improve spontaneously even if the patient deteriorates and often are minimally abnormal by stage 4 or 5. This is also true for the ammonia which will peak in the first day or two but may be normal by 3 to 4 days into the illness. Often there is an increased prothrombin time. Other laboratory findings include nonspecific elevations in the serum and urine amino acids including alanine, glutamine, lysine, and amino-n-butyrate. Sometimes noted are hypophosphatemia, hyperlactinemia, short chain fatty acidemia (i.e. butyrate, valerate, and octenate), azotemia, hyperuricemia, decreased low and high density lipoproteins and cholesterol, and a mixed acid-base disorder. The only true confirmatory test to diagnose Reye's syndrome is a liver biopsy, but this test should not be performed indiscriminately because of the potential bleeding abnormality. Liver biopsy[6] is recommended only from infants or for patients having familial or recurrent episodes. Some physicians recommend a biopsy in children without a preceding viral illness or without vomiting, but we do not recommend biopsy in these patients if they are otherwise typical. Computerized cranial tomography is unnecessary in most cases and often results in a significant delay in starting intracranial pressure monitoring and therapy. The diagnosis should be made by the history, physical examination, and laboratory evaluation.

There has been much debate concerning the etiology of Reye's syndrome. At present, no single theory completely explains all of the clinical, epidemiologic, and pathologic findings. A postinfectious etiology is suggested by the association with a previous viral syndrome. The two viruses with the strongest link are Influenza B and varicella. Influenza B epidemics correlate well with increased reporting of Reye's syndrome.[7] During 1974 there was an Influenza B epidemic, the most severe of the decade; there also were 379 cases of Reye's syndrome reported, compared with 32 cases in 1973. Figures from 1978 revealed that 29%[8] of patients with Reye's syndrome had varicella prior to the onset of their neurologic syndrome. Other viruses have also been implicated (table 1).

Table 1
Chemicals and Viruses Associated with a Reye-like Syndrome

warfarin[35]	reovirus[43, 44]
isopropyl alcohol[36]	echovirus 8, 11[1, 45]
lindane[37]	coxsackie viruses A, B4, B11[1, 44, 46]
antihistamines[38]	adenovirus[47]
decongestants[38]	herpes simplex[48]
unidentified paints[38]	influenza A2[49]
pesticides[37, 38]	parainfluenza[50]
chlordane[39]	Epstein-Barr virus[51]
disulfiram[39]	polio virus-type 1[52]
outdated tetracycline[40]	rubella[53]
phenformin[40]	rubeola[54]
pyrrolidizine[41]	rhinovirus[55]
methylbromide[41]	cytomegalovirus[55]
valproic acid[42]	

A toxic substance has been suggested as an etiologic factor in some patients. Several compounds are known to produce a pattern similar to Reye's syndrome and, because of the similarity to these chemically-induced syndromes, there has been a search for a common toxic agent in these children. There are currently several candidates. Aflatoxin is a heat-stable metabolite from certain strains of the fungus

Aspergillus flavus which has been reported in several outbreaks of Reye's syndrome, including cases from New Zealand,[9] Czechoslovakia,[10] the United States,[11] and Thailand.[12] More recently, seven patients with Reye's syndrome from Mississippi had demonstrable serum levels of aflatoxin.[13] The proposed mechanism of aflatoxin toxicity is hepatic dysfunction with subsequent accumulation of toxic metabolites such as ammonia.[14] Unfortunately, aflatoxin is a common contaminant of dietary cereal grains and nuts, and the role of aflatoxin as an etiologic agent in Reye's syndrome has been difficult to prove.

A more recent and more publicized cause of Reye's syndrome is salicylate ingestion. Several studies[15, 16] have demonstrated increased salicylate use compared with acetaminophen prior to the onset of the syndrome. Although the difference is significant, not all children using salicylate are subject to this illness nor have the children with Reye's syndrome ingested prior salicylate. The proposed mechanism for salicylate toxicity in Reye's syndrome is uncoupling of oxidative phosphorylation. This probably is at the level of several enzymes including inhibition of succinic acid dehydrogenase and oxidation of cytochrome C.[17] Nevertheless, the evidence is suggestive enough that the American Academy of Pediatrics has recommended that children with febrile illnesses not be given salicylate-containing preparations.[18] Others feel that this recommendation is unwarranted at this time.[19, 20] Our feeling is that although no causal association has been definitely proven between salicylate and Reye's syndrome, salicylate should not be used indiscriminately for febrile illnesses in childhood.

Several other classes of substances like fatty acids may be involved in the cause of this illness. An interesting disease entity, Jamaican vomiting sickness,[21] is very similar to Reye's syndrome except there is no viral prodrome. The causative agent for this illness is 4-pentenoic acid,[22] a fatty acid that has been shown to cause ureagenesis and hypoglycemia in test animals. These test animals also developed characteristic brain edema with swollen mitochondria and fat droplets. This illness lends strong support to the possibility that Reye's syndrome may be solely secondary to a toxin. Other chemicals and toxins have been implicated (table 1).

Although the pathogenesis is uncertain, the basic defect appears to be mitochondrial dysfunction.[23] Ultrastructural analysis of cells from patients with Reye's syndrome have revealed mitochondrial dysfunction that can be appreciated as visible changes under the electron microscope. Mitochondria become pleomorphic with swelling that is usually not found in normal children. Mitochondrial dysfunction leads to the buildup of toxic wastes such as ammonia which has been shown to cause central nervous system dysfunction. Walker and Schenker[24] have postulated five different sites of ammonia cerebrotoxicity (figure 2). With this mitochondrial dysfunction, there is also a buildup of other toxic metabolites including short chain fatty acids and amino acids and other inert amines. Whether these changes are due to an intrinsic toxin, extrinsic toxin, genetic predisposition following some viral infection, or some primary defect in ammonia and/or lipid metabolism, only further research will delineate the true mechanisms leading to the

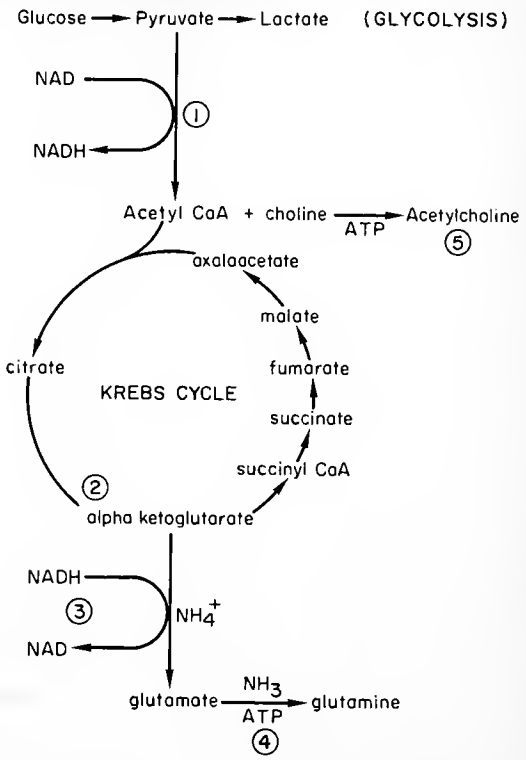

Figure 2: *Proposed sites of ammonia cerebrotoxicity[24]: 1. impaired oxidative decarboxylation of pyruvate, 2. NADH depletion, 3. alpha-ketoglutarate depletion, 4. greater ATP utilization at other steps, 5. decreased acetylcholine formation.*

mitochondrial dysfunction. All these factors probably contribute to the etiology in some patients.

The differential diagnosis includes ruling out other nervous system disorders including meningitis and viral encephalitis. Other infections like salmonellosis or hepatitis can lead to a Reye-like syndrome. Exposure to any of the previously mentioned chemicals or toxins (table 1) needs to be considered. Metabolic diseases including ornithine transcarbamylase deficiency,[25] fatty acid oxidative disorders,[26] or systemic carnitine deficiency[27] also need to be considered, especially in recurrent cases. Finally, any disease with the combination of hepatic disease and encephalopathy may appear as a Reye-like syndrome.

Treatment is based primarily on supportive measures for the metabolic problems that occur in these children. The staging methods have been helpful in standardizing management. The major problem is increased intracranial pressure. At present, intracranial pressure monitoring is recommended for patients who are in stage 3 or worse, or those in stage 2 but deteriorating rapidly. Monitoring allows aggressive treatment for increased intracranial pressure. Methods of treatment include hyperventilation (usually after elective intubation to maintain a PCO2 between 23 and 27 torr), osmotic agents (mannitol 0.25-1 g/kg up to every 2 hours intravenously or glycerol 0.2-0.5 g/kg/hr orally), barbiturate coma (phenobarbital 50 mg/kg

intravenously up to 2 grams maximum with maintenance dose of 20-30 mg/kg or sodium thiopental acutely, 1-2 mg/kg/dose, with a maximum of 2 doses per hour), cooling of body temperature (can go to 90 degrees F), and finally decompressive craniectomy if the above measures fail to keep the intracranial pressure below 20 mm Hg. Other supportive measures include neomycin for ammonia load reduction, stress ulcer precautions, Vitamin K or fresh frozen plasma as needed for bleeding, and finally antibiotics if there is prolonged use of an intracranial pressure monitor. Stage 1 or stable stage 2 patients are carefully observed for any signs of deterioration and supported with intravenous therapy, usually a 10% dextrose solution. The importance of staging cannot be overlooked because along with increased physician awareness this has led to improvement in mortality and morbidity. Referral to a medical center where this complex management can be adequately performed is very important.

Over the years, attempts to treat some of the metabolic abnormalities have not improved the outcome. Peritoneal dialysis and exchange transfusions have led to further complications. Exchange transfusions have been shown to produce increased intracranial pressure which probably is more detrimental to the patient than any of the decrease in ammonia or free fatty acids as well as any toxins present. Peritoneal dialysis has not offered any improvement in mortality or morbidity. Many of the metabolic derangements, including the ammonia and abnormal liver functions, resolve. Other theoretical or previously attempted therapies include steroid therapy[28] which probably is not effective; citrulline-ornithine administration[29] which should theoretically decrease the ammonia load; charcoal hyperperfusion[30] which would decrease abnormal metabolites; intravenous levodopa[31] which increases neurotransmitters; and total body washout[32] to remove toxins or metabolic byproducts.

There has been a significant improvement in outcome. Mortality has improved from the 100% case fatality noted in the initial reports by Reye and Johnson to a present level of approximately 25%,[33] an improvement noted at our institution as well. A recent study[34] of long-term survivors has shown a decrease in morbidity although the higher stages continue to have a worse prognosis. Earlier diagnosis and aggressive management of increased intracranial pressure have been the major contributors to this improvement. The use of staging systems and management protocols has led to the earlier referral of seriously ill patients as well as the standardization of treatment which accounts for the improvements noted.

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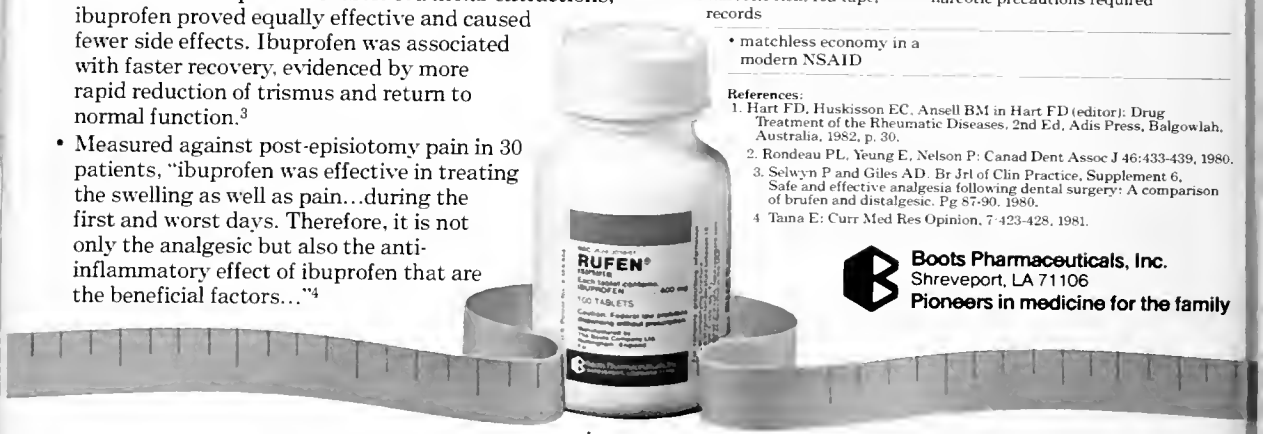

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INDICATIONS AND USAGE: Treatment of signs and symptoms of rheumatoid arthritis and osteoarthritis during acute flares and in the long-term management of these diseases. Safety and effectiveness have not been established for Functional Class IV rheumatoid arthritis.

Relief of mild to moderate pain: Treatment of primary dysmenorrhea.

CONTRAINDICATIONS: Patients hypersensitive to ibuprofen, or with the syndrome of nasal polyps, angio-edema and bronchospastic reactivity to aspirin or other nonsteroidal anti-inflammatory drugs (see WARNINGS).

WARNINGS: Anaphylactoid reactions have occurred in patients hypersensitive to aspirin (see CONTRAINDICATIONS). Peptic ulceration and gastrointestinal bleeding, sometimes severe, have been reported. Peptic ulceration, perforation, or gastrointestinal bleeding can end fatally, however, an association has not been established. Rufen should be given under close supervision to patients with a history of upper gastrointestinal tract disease, and only after consulting the ADVERSE REACTIONS.

In patients with active peptic ulcer and active rheumatoid arthritis, nonulcerogenic drugs, such as gold, should be attempted. If Rufen must be given, the patient should be under close supervision for signs of ulcer perforation or gastrointestinal bleeding.

PRECAUTIONS: Blurred and/or diminished vision, scotomata, and/or changes in color vision have been reported. If developed, discontinue Rufen and administer an ophthalmologic examination.

Fluid retention and edema have been associated with Rufen, caution should be used in patients with a history of cardiac decompensation.

Rufen can inhibit platelet aggregation and prolong bleeding time. Use with caution in patients with intrinsic coagulation defects and those taking anticoagulants.

Patients should report signs or symptoms of gastrointestinal ulceration or bleeding, blurred vision or other eye symptoms, skin rash, weight gain or edema.

To avoid exacerbation of disease or adrenal insufficiency, patients on prolonged corticosteroid therapy, this therapy should be tapered slowly when adding Rufen.

DRUG INTERACTION: *Coumarin-type anticoagulants*: The physician should be cautious when administering Rufen to patients on anticoagulants.

Aspirin: Concomitant use may decrease Rufen blood levels.

PREGNANCY AND NURSING MOTHERS: Rufen should not be taken during pregnancy nor by nursing mothers.

ADVERSE REACTIONS: **Incidence greater than 1%. Gastrointestinal**: The most frequent adverse reaction is gastrointestinal (4 to 16%). Includes nausea*, epigastric pain*, heartburn*, diarrhea, abdominal distress, nausea and vomiting, indigestion, constipation, abdominal cramps or pain, fullness of GI tract (bloating and flatulence). Central Nervous System: dizziness*, headache, nervousness. Dermatologic: rash* (including maculopapular type), pruritus. Special Senses: tinnitus. Metabolic: decreased appetite, edema. Fluid retention: Fluid retention generally responds promptly to drug discontinuation (see PRECAUTIONS). *Incidence 3% to 9%.

Incidence less than 1 in 100. Gastrointestinal: gastric or duodenal ulcer with bleeding and/or perforation, hemorrhage, melena. Central Nervous System: depression, insomnia, confusion, emotional lability, somnolence, aseptic meningitis with fever and coma. Dermatologic: vesiculobullous eruptions, urticaria, erythema multiforme, Stevens-Johnson syndrome and alopecia. *Special Senses*: hearing loss, amblyopia (blurred and/or diminished vision, scotomata and/or changes in color vision) [see PRECAUTIONS]. Hematologic: neutropenia, agranulocytosis, aplastic anemia, hemolytic anemia (sometimes Coombs' positive), thrombocytopenia with or without purpura, eosinophilia, decreases in hemoglobin and hematocrit. Cardiovascular: congestive heart failure in patients with marginal cardiac function, elevated blood pressure. Allergic: syndrome of abdominal pain, fever, chills, nausea and vomiting, anaphylaxis, bronchospasms (see CONTRAINDICATIONS). Renal: acute renal failure in patients with preexisting significantly impaired renal function, decreased creatinine clearance, polyuria, azotemia, cystitis, hematuria. Miscellaneous: dry eyes and mouth, gingival ulcers, rhinitis.

Causal relationship unknown. Gastrointestinal: pancreatitis. Central Nervous System: paresthesias, hallucinations, dream abnormalities, pseudotumor cerebri. Dermatologic: toxic epidermal necrolysis, photoallergic skin reactions. Special Senses: conjunctivitis, diplopia, optic neuritis. Hematologic: bleeding episodes. Allergic: serum sickness, lupus erythematosus syndrome, Henoch-Schonlein vasculitis. Endocrine: gynecomastia, hypoglycemia. Cardiovascular: arrhythmias (sinus tachycardia, bradycardia, and palpitations). Renal: renal papillary necrosis.

OVERDOSAGE: Acute overdosage, the stomach should be emptied. Rufen is acidic and excreted in the urine, alkaline diuresis may benefit.

DOSAGE AND ADMINISTRATION: Rheumatoid arthritis and osteoarthritis, including flareups of chronic disease: Suggested dosage 400 mg t.i.d. or q.i.d.

Dysmenorrhea: 400 mg every 4 hours as necessary.

Mild to moderate pain: 400 mg every 4 to 6 hours as necessary for the relief of pain. *Do not exceed 2,400 mg per day.*

CAUTION: Federal law prohibits dispensing without prescription.

RF-077

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SCIENTIFIC ARTICLE

Cancer Control and Community Physicians in North Carolina

Wesley C. Fowler, Jr., M.D., Lawrence M. Cutchin, M.D., Daniel L. Crocker, M.D., James B. Hall, M.D., James W. Begun, Ph.D., Anne C. Freeman, M.S.P.H., Barbara S. Hulka, M.D., Arnold D. Kaluzny, Ph.D., Shirley P. O'Keefe, M.S.P.H., Michael J. Symons, Ph.D., and Ying-Yuan Lee, M.S.P.H.

WHILE the term cancer control has an ever changing definition, there is general agreement that the primary objective of cancer control is to reduce the incidence and severity of the disease. A substantial portion of cancer care is provided outside university teaching hospitals, and cancer control can be accomplished by applying current knowledge about cancer prevention, detection, treatment and rehabilitation to clinical practice settings at the community level. In these terms cancer control becomes a question of using knowledge and/or transferring technology. That is, given current information, are patients with cancer being detected and treated and are patients being rehabilitated optimally?

The purpose of this paper is to describe an ongoing cancer control project in North Carolina specifically designed to improve the current clinical management of patients with breast, cervical, and endometrial cancer. To accomplish this objective, the project combines basic research into the patterns of care provided by physicians in different types of practice settings for selected disease sites and the use and evaluation of those data to encourage the acceptance of current technology in the clinical management of cancer patients.

The project was designed as a demonstration project involving a limited geographic area and three disease sites. Based on the outcome of the project and after suitable modification, the approach could be extended to other clinicians in North Carolina and be applied to other types of cancer and other medical problems. The approach provides the basis for planning the cancer control effort at the University of North Carolina Cancer Research Center.

The basic assumptions of this project are that (a) a cancer knowledge transfer problem does exist, and (b) addressing the problem could improve the outcome of treatment provided to cancer patients.

From the Cancer Research Center, University of North Carolina at Chapel Hill (Dr. Fowler, Ms. Freeman, Dr. Hulka, Dr. Kaluzny, Ms. O'Keefe, Dr. Symons, Mr. Lee); Health Education Foundation of Eastern North Carolina, Inc. (Dr. Cutchin); Boice-Willis Clinic, P.A., Rocky Mount (Dr. Crocker); Department of Obstetrics and Gynecology, Charlotte Memorial Hospital (Dr. Hall); Sloan Program of Hospital and Health Services Administration, Cornell University (Dr. Begun).

Epidemiology of Breast, Cervical and Endometrial Cancer in North Carolina

The American Cancer Society estimated that there would be 19,000 new cases of cancer and 9,800 deaths (167 per 100,000 population) from cancer among the inhabitants of North Carolina in 1981.[1] Table 1 shows the estimated distribution of new cases and deaths by selected disease sites. Breast cancer contributes the second highest number of new cases, after lung cancer, and the third highest number of deaths, after lung and colon-rectum cancer. Uterine (and cervical) cancer, excluding carcinoma *in situ*, produces a significant number of new cases (1,400) and deaths (275) each year.

The crude death rate from cancer for North Carolina in 1980 was 165.1 per 100,000.[2] The crude death rate from heart disease was 299.2. For breast cancer the state's rate was 26.0 and for cervix cancer it was 5.4. No separate data are available for endometrial cancer. Table 2 shows the deaths and death rates for the eight counties in the Cancer Control and Community Physicians study for breast and cervical cancer. Orange, Mecklenburg, and New Hanover counties have rates close to those of the whole state. The rates from the counties in Area L vary from considerably below the state rate to considerably above, especially those for Nash County. Buncombe County's rates are also high-

Table 1
Estimated New Cases and Deaths from Cancer by Disease Site, North Carolina, 1980

Site	New Cases	Deaths
Lung	2,800	2,400
Breast	2,500	750
Colon-Rectum	2,400	1,000
Prostate	1,900	550
Uterus*	1,400	275
Oral	650	225
Leukemia	500	375
Pancreas	500	450
Stomach	400	250
Other Sites	5,950	3,525
Total	19,000	9,800

* Does not include carcinoma *in situ* of the cervix. Separate data for endometrial end cervical cancer are not available.

Table 2

Number of Deaths and Death Rates for Study and Comparison Site Counties, 1980

	Breast		Cervix	
	Deaths	Rate per 100,000	Deaths	Rate per 100,000
North Carolina	788	25.9	164	5.4
Edgecombe (Area L)	5	16.7	1	3.3
Halifax (Area L)	4	13.7	1	3.3
Nash (Area L)	12	33.7	6	16.9
Wilson (Area L)	6	18.1	5	15.0
Mecklenburg (CMH)	59	27.7	12	5.6
Orange (NCMH)	9	23.5	1	2.6
New Hanover (NHMH)	12	22.1	2	3.7
Buncombe (MMH)	24	28.2	7	8.2

er. It is possible that the difference could be the result of population age and race differences in the counties. Adjusted data are not available.

The NC Division of Health Services[2] reports that from 1979 to 1980 the death rate for cervical cancer in North Carolina rose 29.2%. The rate for black women rose 84%. This follows a decline of the cervical cancer death rate from 1963 to 1979, and is therefore of serious concern to the health care community.

Methods

In order to accomplish the objectives of this project a cooperative effort was required involving the UNC Cancer Center, the Area Health Education Centers in five areas of the state, the Clinical Oncology Division of the UNC School of Medicine, the Departments of Epidemiology and Health Policy and Administration at the School of Public

Table 3

Cervical Cancer Criteria

A. History — each patient's record should contain information on the following items as part of the history-taking process:
   1. Patient's age, race, county of residence, number of pregnancies
   2. Recent symptoms (pain, bleeding, discharge, etc.)
   3. Any previous pelvic surgery or pelvic pathology (PID, endometriosis, etc.)
   4. Relative frequency of past Pap smears
   5. Date and results of last Pap smear
   6. History of involuntary weight loss
   7. History of previous malignancy and/or radiation therapy
   8. Maternal history of intrapartum drug exposure

B. Physical examination — there should be evidence in the patient's record of the following items being obtained and recorded:
   1. Height, weight, blood pressure
   2. Results of abdominal examination for masses or ascites
   3. Size, location, and description of lesion, any evidence of extension into adjacent structures
   4. Status of inguinal nodes and any other lymphadenopathy
   5. Pelvic exam
   6. Rectal exam
   7. Breast exam

C. Diagnosis
   1. Tissue diagnosis made prior to any treatment and within six to eight weeks of repeated abnormal Pap smears
   2. Diagnosis made by one of the following methods under the conditions specified:
      a. Visible lesion — punch biopsy only
      b. Nonvisible lesion or unavailability of colposcopically directed biopsy-conization
      c. Lesion is highly suspicious for invasive cancer but this is not documented by punch biopsy-conization

D. Pretreatment Evaluation
   1. Pertorm the following tests prior to any treatment and within four weeks of positive diagnosis on all patients:
      Chest X-ray
      IVP
      CBC
      Admission panel/SMAC (includes liver studies)
      Cystoscopy
      Sigmoidoscopy
      Urinalysis (micro and chemical)
      VDRL
   2. Complete the following additional tests when indicated as specified or as patient's condition indicates:
      a. liver-spleen scan — enlarged liver or abnormal liver function studies
      b. bone scan — bone pain, elevated alkaline phosphatase
      c. lymphangiograph — possible para-aortic node involvement
      d. venograph — unilateral leg edema
      e. barium enema — for patients over 50 years of age or when indicated by GI symptoms, or Stage II or greater
      f. CAT scan or ultrasound of pelvis and para-aortic nodes — Stages IIB and IIIB
      g. selective bone X-rays — if scan positive or equivocal
      h. CEA level
   3. Clinically stage the patient according to FIGO and include drawing of lesion

E. Treatment Plan — the appropriate treatment varies with the clinical stage of disease as specified below:
   Stage IA — defined as <3 mm invasion without confluence, lymphatic or vascular involvement, measured from the basement membrane
   Hysterectomy, or radiation therapy if medically inoperable
   Stage IB or IIA — lesion <5 cm
   radical hysterectomy with pelvic node dissection. If pelvic nodes are positive then postoperative radiation therapy **OR** external beam radiation and intracavitary radiation therapy
   Stage IB or IIA — lesion >5 cm
   external beam and intracavitary radiation therapy followed by TAH BSO **OR** external beam and intracavitary radiation therapy alone
   Stage IIB-IIIB
   external beam radiation and intracavitary radiation therapy
   Stage IVA
   external beam and intracavitary radiation therapy **OR** external beam radiation therapy alone
   Stage IVB
   palliative external beam radiation therapy **OR** chemotherapy
   Barrel shaped lesions
   external beam and intracavitary radiation therapy followed by TAH BSO

F. Consultations — consultations should be sought with the following specialists according to the clinical stage of the disease:
   Stage IA — gynecologist and pathologist
   All stages beyond IA — gynecologist, gynecology oncologist, radiation therapist, pathologist
   Stage IVB — gynecologist, gynecology oncololgist, pathologist

Health, and the UNC School of Medicine's Department of Community Medicine.

Five AHEC regions were chosen to comprise three study sites and two comparison sites. The three study sites were a university affiliated hospital (North Carolina Memorial), an urban area hospital (Charlotte Memorial) and a combination of rural hospitals (Nash General, Wilson Memorial, Edgecombe General and Halifax Memorial) from Area L. The comparison sites were New Hanover Memorial and Memorial Mission Hospitals.

The study depended heavily on obtaining the cooperation of the local physicians. They had to be willing to participate in the criteria setting process and give permission for their patients' medical records to be reviewed. Our main principle was that we would intrude on each physician's time as little as possible and, in return, provide the maximum amount of information that would be useful to his or her practice. We were very fortunate to obtain excellent cooperation in all five geographic areas.

Criteria Development

A steering committee of physician representatives was formed in each of the three study sites with the objective of drafting criteria for the diagnosis and treatment planning of patients with endometrial, breast and cervical cancer. The committees began their work on a sample set of criteria compiled from already existing criteria such as the American College of Radiology's Patterns of Care and the Grand Rapids Cancer Control Program's Criteria for Patient Management. A draft criteria list was prepared for each disease by the committee in each of the three study areas. Each group developed criteria specific to patient management practices prevalent in its own community.

These draft criteria were then distributed to all practicing physicians in each area who care for patients with each type of cancer. Physicians were asked to comment on the criteria and the relevance of the criteria to their practice. Broad participation in the criteria-setting process was considered vital to the success of the project and every effort was made to elicit responses from physicians.

All comments from physicians were then compiled and reviewed by each steering committee. After a usually lively debate, final versions of the criteria were established for each area. The two comparison sites did not set criteria.

The final criteria lists were arranged into five categories: history, physical examination, diagnosis, pretreatment evaluation, and treatment plan (see table 3 for example). The three criteria lists for each cancer type were very similar for each study area. One area of difference was in the pretreatment evaluation or test criteria; one hospital had cystoscopy and sigmoidoscopy as required tests for endometrial cancer while another had the same tests as optional to be done on all patients except stages IA and IB. Other differences existed in the choice of treatment plan by the clinical stage of disease or in the items to be included in the patient's history.

Development and Pretest of Abstract Forms and Procedures

Based on the sets of criteria, abstract forms were developed and pretested for administrative feasibility and code comprehensiveness. During this pretest phase special attention was given to the validity of the approach, that is, the assessment of physician performance from medical records. A basic issue is the possibility that excellent care may be given, but may not be discernible because of inadequacy or inaccuracy of recording.

There has been no definitive research on this issue, primarily because of costs in conducting parallel, independent assessments based on direct observation of patient management, compared with a review of records, involving a sufficient number and variety of cases. Nevertheless, several studies have been reported that indicate that good recording and good practice are significantly related although the relationships are not perfect.[3-5]

Medical Chart Review

The patients' records included in the review were of those women diagnosed as having breast, endometrial and cervical cancer from January 1, 1977 through December 31, 1980 in the five AHEC sites. *In situ* cancer cases were excluded as were women who were pregnant at the time of diagnosis. Patients who refused to complete a pretreatment evaluation and those previously treated elsewhere prior to the admission to the participating hospital were excluded. Permission was obtained from the appropriate committees at each hospital for a review of patient records. Only the records of those physicians agreeing to participate in the study were used. Medical records personnel, nurses, and a physician were hired to abstract the necessary data from the records and were trained at their hospitals by the Project Director.

The numbers of records actually abstracted are presented in table 4. Because of the large number of patients with gynecologic cancer and the small number (3) of physicians treating these patients at NCMH, a sampling procedure was used to limit the records reviewed per physician to thirty. The same procedure was applied to the breast cancer records for one physician at NCMH.

Each patient's record was reviewed to determine eligibility and the abstract form was completed on all eligible records. The data abstracted included basic patient and diagnostic data, information to determine which physician participated in which part of the patient's care, and evaluation of criterion performance. For example, the diagnostic method(s) were examined to determine if the method(s) matched the area's criterion. Then the actual methods used were recorded in the order done and the result of each was coded.

When forms were completed and received in Chapel Hill, each was reviewed for completeness, internal consistency and correct coding following usual quality control procedures. Confidentiality of the data was always of utmost concern. No patient names were ever written on the forms and patient identification numbers were not entered on the computer. Physicians were identified only by a number assigned for the project.

Use of Data for Feedback to Physicians

Physicians at NC Memorial Hospital, Charlotte Memorial Hospital and the four hospitals in Area L were provided with a description of their patient management profile com-

Table 4
Number of Records Reviewed by Area

	NCMH	CMH	AREA L	NHMH	MMH
Breast	160	212	53	215	128
Cervical	96	76	64	26	25
Endometrial	99	72	72	35	45

pared with the criteria for their area. Information was given only to the individual physician with no identification of patients or other physicians.

This feedback to physicians was designed in three steps. First, each physician received a bar graph showing his/her performance on groups of criteria compared with the other area physicians (see figure 1). Two weeks later, each was sent a more detailed report showing his/her performance on each individual criterion (see table 5). Shortly thereafter a seminar was held at which the group results were presented and discussed further.

Physicians located in the comparison sites participated in the chart review but have not been provided with a description of their patients' management compared with the rest of the physicians in their region or compared with audit criteria.

Evaluation of Data Feedback Program

It is reasonable to expect some behavior change from the data feedback process, based upon past experiences reviewed by Greene and Simons[6] and more recently in several studies involving cost[7] and utilization.[8-9] However, a repeat chart review will be necessary in order to determine the actual effectiveness of the data feedback program. Thus we will collect and analyze data for the 12 month period since physicians were presented with their feedback results. From these additional data we will be able to evaluate changes in practice patterns. By comparing changes in behavior for the physicians who received the feedback on performance with any changes in behavior for the comparison site physicians we will be able to estimate the impact of the feedback process.

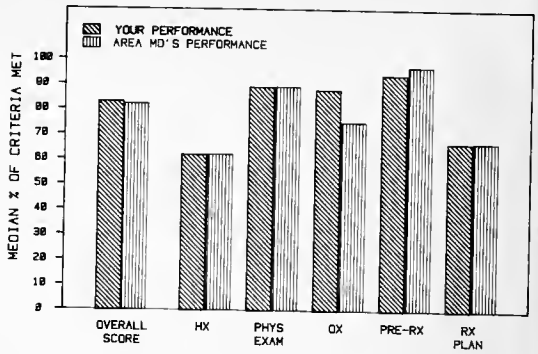

Figure 1. *Cancer control project: performance breakdown by criteria categories. 1977-1980. Your patient total: 29. Disease site: endometrium.*

Present Status

Criteria for the management of patients with breast, endometrial and cervical cancer were developed in each of the three study sites. Using these criteria as a guideline, all data have now been collected from all five sites. The editing, coding and reviewing of the data are now complete and the data file is ready for analysis.

The feedback portion of the project is almost complete. Full sets of feedback information have been distributed to all of the participating physicians in Chapel Hill and Area L and to the physicians treating endometrial and cervical cancer in Charlotte. The feedback for physicians treating breast cancer in Charlotte is scheduled.

Arrangements are being made now for the second round of data collection in a year's time. This will be followed by a major analysis effort and further feedback to all the participating physicians, including those in the comparison sites, on the management of new patients seen in the intervening time. There will then be a final report describing the results.

Table 5
Cancer Control Project: Your Performance on Each Criterion

1977-1980 Criteria	Disease site: breast			Your patient total: 4
	Performance*			
	Your patients		Area MDs' patients	
	#	%	#	%
Category 1. History				
1. Age	4	100	158	99
2. Race	4	100	158	97
3. County of residence	4	100	158	100
4. No. of pregnancies	4	25	158	51
5. Age at first intercourse	4	25	158	34
6. Menstrual history	4	75	158	78
7. Previous hormone use	4	25	158	43
8. Previous breast cond/surgery	4	100	158	93
9. Recent symptoms	4	100	158	99
10. Personal history of cancer	4	100	158	91
11. Family history — other cancer	4	50	158	53
12. Family history — breast cancer	4	75	158	73

Table 5
Cancer Control Project: Your Performance on Each Criterion

1977-1980 Criteria	Disease site: breast			Your patient total: 4
	Performance*			
	Your patients		Area MDs' patients	
	#	%	#	%
13. Self-examination frequency	4	25	158	12
14. Clinical exam frequency	4	0**	158	3
15. Time since last mammogram	4	25	158	14
16. Results of last mammogram	4	25	158	14
Criteria Category Score	**Your median: 50**		**Area MDs' median: 63**	
Category 2. Physical exam				
17. Ht and wt	4	100	158	66
18. Appearance of breast	4	75	158	92
19. Which breast involved	4	100	158	99
20. Location in breast	4	100	158	94
21. Size of mass	3	100	146	88
22. Examination of mass	4	100	158	94
23. Diagram of location	3	33	140	41
24. Nodal status	4	25	158	26
25. Arm edema present or not	4	25	158	59
26. Liver exam	4	100	158	94
27. Pelvic exam	4	50	158	64
28. Pap smear results	4	25	158	34
29. Rectal exam	4	25	158	64
30. Stool guaiac results	4	25	158	58
Criteria Category Score	**Your median: 66**		**Area MDs' median: 71**	
Category 3. Diagnosis				
31. Tissue diagnosis prior to Tx	3	100	117	91
32. Diagnostic method	3	0	117	50
33. Histology recorded	3	100	117	99
34. Grade recorded	3	0	117	19
35. Estrogen receptor studies	3	33	117	61
Criteria Category Score	**Your median: 40**		**Area MDs' median: 60**	
Category 4. Pre-treatment				
Required tests done before Tx				
36. Chest X-ray	4	100	157	98
37. Admission panel/blood tests	4	50	157	85
38. CBC	4	100	157	96
39. CEA level	4	0**	157	20
40. Urinalysis	4	100	157	86
41. Bilateral mammograms	4	75	157	74
Optional tests done as indicated:				
42. Liver scan	2	100	140	66
43. Bone scan	3	67	140	77
44. Selective bone X-rays	2	100	125	89
45. Clinically stage pts — TNM	4	0**	157	8
46. Patient and family consultation on treatment options	4	25	157	59
47. Reach to Recovery visit	3	100	89	83
Criteria Category Score	**Your median: 62**		**Area MDs' median: 73**	
Category 5. Treatment				
48. Treatment plan	3	33	122	30
49. Pretreatment consultations	4	0**	146	21
50. Post mastectomy exercises	3	33	89	76
51. Reconstruction considered	3	0	89	2
52. Followup schedule	4	100	152	95
53. Return visit — not less than 2 times in first year	4	100	146	92
54. CEA level after 12-18 mos	4	0**	138	37
55. Mammograms and chest X-ray after 12-18 mos	4	50	137	27
56. Serum chemistries, bone scan	4	100	144	89
Criteria Category Score	**Your median: 53**		**Area MDs' median: 57**	

* Only those patients for whom a criterion was applicable were counted.
** Your score for this criterion was below 25%. This flag was computed for only those criteria where you had more than 3 patients for whom the criterion was applicable.

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A Toxin To Test Your Mettle — Iron Poisoning

Ronald B. Mack, M.D.

On paper at least, iron poisoning would seem to be an ideal toxic situation for a clinician to become involved in — the toxic and lethal doses are fairly well worked out, blood iron levels are readily available, iron tablets in the stomach are commonly radiopaque and there is a well-studied efficient direct antagonist available. So much for fantasies!! Like so many situations in medicine, the ideal is far from reality.

Ingestion of iron by the "little people" is relatively common; the most common sources are iron tablets prescribed for pregnant and/or anemic ladies with "low blood" and the ever popular, ubiquitous vitamin with iron combinations often in the form of cartoon characters. (The latter are a necessary evil of the free-enterprise system but so are collard greens.) Let us not forget the many OTC iron preparations for those with "tired blood." Iron in tablet form is often a bright red color, round and shiny and inviting to little children, resembling a famous candy. It is only a wonder that iron poisoning is not more common.

The amount of elemental iron in the various iron products can vary greatly from ferrous gluconate at 40+ mg/tablet to ferrous fumerate at 100+ mg/tablet, with the very popular ferrous sulfate preparation at 60+ mg/tablet. Ferrous sulfate is the least expensive and probably most common iron preparation involved in accidental overdose. It might be wise to state the obvious at this time — when you are prescribing iron or trying to figure out if an ingested dose is toxic or not, the part of the iron compound that is important is elemental iron. For example, a typical ferrous sulfate tablet contains 325 mg but the elemental iron content is about 65 mg (1/5 of the compound). Children's vitamins with iron contain, on the average, about 15 mg elemental iron per tablet or per Fred Flintstone. A toxic dose of elemental iron is about 20-60 mg/kg whereas a potentially lethal dose of elemental iron is three times that amount. One method that I use when instructing students and house officers is to mention that one ferrous sulfate tablet is 60-65 mg of elemental iron, and therefore a toxic dose for a child is one ferrous sulfate tablet per kilo. If the typical "poisonee" is a 2-year-old, then the weight should be approximately 12 kilos and thus 12± such inviting tablets could easily be quite toxic.

The clinical features of iron poisoning are both interesting and frightening and classically are divided into stages. *Stage I* usually occurs in the first 6 hours post ingestion and consists primarily of the local corrosive effects of iron on the gastric mucosa. Symptoms include cramping abdominal pain, vomiting, and diarrhea — the latter two often bloody. If the blood loss in this stage is severe, shock, lethargy, and coma can occur. In this early phase, *leucocytosis* (>15,000/mm^3) and *hyperglycemia* (>150 mg/dl) are not uncommon. *Stage II*, also known as the latent period, is a phase in which the patient appears improved in contrast to Stage I. This stage lasts less than 24 hours usually and in fact may not appear at all. It is a deceptive interval, however, and the patient should not be sent home at this time. *Stage III* is definitely bad news. Whereas Stage I is usually due to the local effect of iron on the GI mucosa, Stage III may be thought of as due to systemic iron toxicity. It can erupt from as early as a few hours post ingestion to as late as 48 hours. A typical patient in Stage III "crashes" — shock is the operant condition here and occurs as a result of hypovolemia as well as damage to blood vessels by the iron; possibly in the form of ferritin. In this stage other bad things can happen, i.e., *fever, coagulopathy, severe metabolic acidosis, hepatic failure, convulsions, lethargy, coma* and *death*. Hematemesis and melena can continue, of course. *Stage IV* concerns late sequellae (if the patient survives the other stages) such as pyloric or antral obstruction secondary to the cicatrix produced as a reaction to the corrosive action of iron. Stage IV can occur weeks after ingestion and is not common anymore.

The diagnosis of iron poisoning should begin with a good history and quick but thorough physical exam. A serum iron level should be obtained if you can get levels that are very accurate and readily available. The serum iron usually peaks 2-4 hours post ingestion and this interval is the time to obtain the initial blood level (some authors allege that 4 hours post ingestion is the best time). Interpretation of serum iron levels differ among authorities even as we speak, but here is what I believe and what I think at least others that I respect believe: (a normal serum iron level = 50-150 μg/dl) < *350 mg/dl* of elemental iron usually is present in the asymptomatic patient and chelation is not usually necessary (there are always exceptions). *350-500 mg/dl* — the patient should be hospitalized and chelated if symptomatic. > *500 mg/dl* — this is the bad number. At this level the serum iron level exceeds the total iron binding capacity and systemic as well as the local effects of iron are present. The advice at this point is fairly clear — chelate with *deferoxamine*. >*1000 mg/dl* — chelate of course, consider exchange transfusions, and send for a priest, a rabbi, a minister or a mullah.

From the Department of Pediatrics, Bowman Gray School of Medicine, Wake Forest University, Winston-Salem, NC 27103.

If the patient is symptomatic you may have to throw these numbers out the window and treat the sick patient! Treat the patient, not the poison!!

It is all very nice to be able to get rapid, accurate serum iron levels but what if you can't? Are there other ways to diagnose the degree of iron poisoning fairly efficiently, but albeit less accurately? Yup!! One method, which I prefer, is the vin-rosé test, AKA the provocative chelation test. In this test, deferoxamine 25-50 mg/kg i.m. (maximum 1 gram) is administered and urine is collected subsequent to the injection. If the serum iron exceeds the iron binding capacity, the "free" iron is chelated by the deferoxamine and is excreted in the urine as ferrioxamine which imports to the urine a vin-rosé color. This vin-rosé color *often* correlates with a serum iron of 500 μg/dl or above. This method is not foolproof of course. Another method that has recently been reported relates to emergency assessment of the degree of toxicity in iron poisoned patients based on clinical observation.[1] In this article the authors claim that if in the first 6 hours post ingestion the patient has diarrhea or vomiting or leucocytosis ($>15000/mm^3$) or hyperglycemia (>150 mg/dl) or positive abdominal x-rays for the presence of iron then the likelihood is high that the serum iron will be abnormal. They further state that any patient who persists in being asymptomatic for six hours following ingestion probably can be sent home without prejudice.

Is the emergency management of iron ingestion cut and dried and well agreed upon? Nope!!! Almost everyone agrees that you need to empty the patient's stomach — preferably by ipecac syrup if the patient is alert or by lavage if the patient is obtunded. The gastric emptying has classically been followed by methods used to complex or bind the iron still in the stomach. The older of the methods, administration with 50-100 ml of 5% $NaHCO_3$, has been my favorite until recently; the purpose was to produce an insoluble non-toxic compound, ferrous carbonate. A newer method, instilling dilute sodium dihydrogen phosphate solution (1 part Fleet's enema to 4 parts water per os — perish forbid!!) was one modality I never tried and cannot recommend. This latter method can lead to hypocalcemic tetany, hyperphosphatemia, severe acidosis and hypernatremia — no thanks!! As a result of a recent study,[2] I don't use either one since the new study shows that neither complexes the iron well at all. The absolute newest approach is to use magnesium hydroxide (yes, milk of magnesia) to produce insoluble hydroxide salts. Apparently this method works quite well experimentally in animals. Human studies on a grand scale are lacking at this time but I wouldn't hesitate to use magnesium hydroxide for this purpose. Until this last method is given an imprimatur, using saline to lavage the stomach seems to be the way to go. I would also not use oral deferoxamine to complex iron in the stomach as it has never been documented to be helpful. Activated charcoal does not absorb iron so its avoidance seems like a good idea.

After gastric emptying, an x-ray of the abdomen should be obtained. Fortunately iron is radiopaque and the tablets, if undissolved, will "light up." If you can still see the tablets in the stomach at this point repeat emesis and/or lavage. If you have evidence that emesis and gastric lavage are unsuccessful in removing iron that might be imbedded in the gastric mucosa, then emergency gastrotomy must be strongly considered — it can be life saving. If, however, you are convinced that the stomach is empty, saline cathartics with a bit of charcoal mixed in should be given to drive the remaining iron fragments through the GI tract. Needless to say, all fragments removed from the stomach by emesis/lavage should be examined for the presence of iron.

Although there are still many arguments, the treatment is fairly straightforward. After supporting the patient and stabilizing the vital signs and decontaminating the GI tract and determining the degree of intoxication then chelation, if indicated, is begun. Deferoxamine is the drug of choice; it forms the soluble ferrioxamine that is eliminated by the kidney. I prefer to give this drug i.v. — 15 mg/kg/hr — slowly, because one of the side effects is hypotension and these patients often are already in trouble with shock. When the chelation is proceeding successfully and the complexed iron is being excreted and the serum iron falls the urine changes from vin-rosé to vino bianco (white wine). This chelation therapy has reduced the mortality of iron poisoning from almost 50% to less than 1% in many series. Whom should you chelate? Certainly those in coma, in shock, and in whom the serum iron exceeds the total iron binding capacity should be chelated, i.e., including those with a positive vin-rosé test. Intravenous fluids constitute a major therapeutic modality in this poisoning.

I realize that this is a "heavy" subject, but it appears as if this problem will not go way "ferrous."

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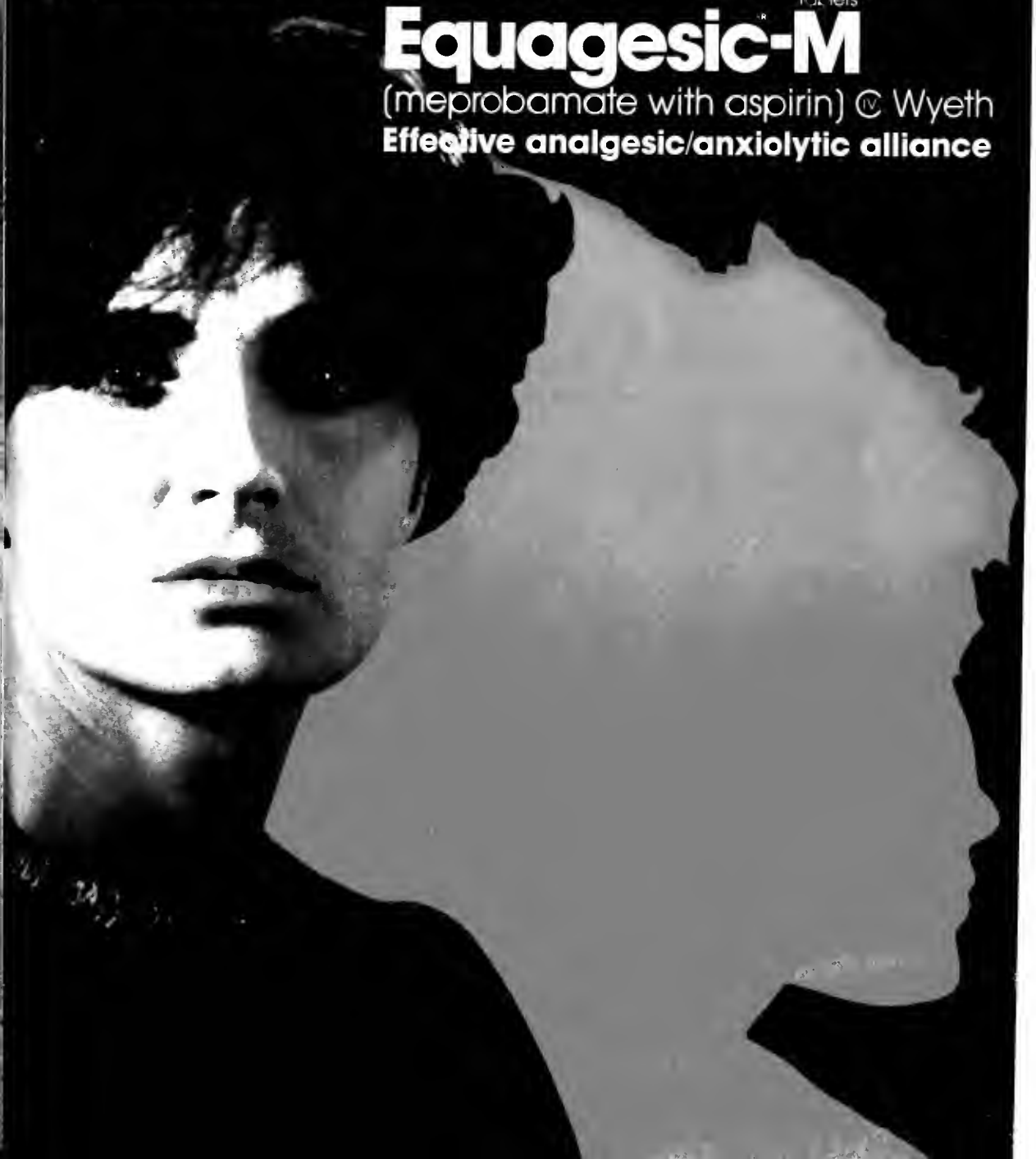

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[BRIEF SUMMARY]

DESCRIPTION Each tablet contains 200 mg meprobamate and 325 mg aspirin.

INDICATIONS Adjunct in short term treatment of pain accompanied by tension and anxiety in patients with musculoskeletal disease. Clinical trials demonstrated in these situations relief of pain is somewhat greater than with aspirin alone. Effectiveness in long term use, i.e. over 4 months, has not been assessed by systematic clinical studies. Physicians should periodically reassess usefulness of drug for individual patients.

CONTRAINDICATIONS ASPIRIN: Allergic or idiosyncratic reactions to aspirin or related compounds. MEPROBAMATE: Acute intermittent porphyria; allergic or idiosyncratic reactions to meprobamate or related compounds, e.g. carisoprodol, mebutamate, or cartrimal.

WARNINGS ASPIRIN: Use salicylates with extreme caution in patients with peptic ulcer, asthma, coagulation abnormalities, hypoprothrombinemia, vitamin K deficiency, or those on anticoagulants. In rare instances, aspirin in persons allergic to salicylates may result in life threatening allergic episodes. MEPROBAMATE: DRUG DEPENDENCE: Physical and psychological dependence and abuse have occurred. Chronic intoxication from prolonged ingestion of usually greater than recommended doses is manifested by ataxia, slurred speech, and vertigo. Therefore, carefully supervise dose and amounts prescribed and avoid prolonged use, especially in alcoholics and others with known propensity for taking excessive quantities of drugs. Sudden withdrawal after prolonged and excessive use may precipitate recurrence of preexisting symptoms, e.g. anxiety, anorexia, insomnia, or withdrawal reactions, e.g. vomiting, ataxia, tremors, muscle twitching, convulsive states, hallucinosis, and rarely convulsive seizures. Such seizures are more likely in persons with CNS damage or preexistent or latent convulsive disorders. Onset of withdrawal symptoms occurs usually within 12 to 48 hours after discontinuation; symptoms usually cease within next 12 to 48 hour period. When excessive dosage has continued for weeks or months, reduce dosage gradually over 1 to 2 weeks rather than stop abruptly. Alternatively, a short acting barbiturate may be substituted, then gradually withdrawn.

POTENTIALLY HAZARDOUS TASKS: Warn patients meprobamate may impair mental or physical abilities required for potentially hazardous tasks, e.g. driving or operating machinery.

ADDITIVE EFFECTS: Since CNS suppressant effects of meprobamate and alcohol or meprobamate and other psychotropic drugs may be additive, exercise caution with patients taking more than one of these agents simultaneously.

USAGE IN PREGNANCY AND LACTATION: An increased risk of congenital malformations associated with minor tranquilizers (meprobamate, chlordiazepoxide, and diazepam) during first trimester of pregnancy, has been suggested in several studies. Because use of these drugs is rarely a matter of urgency, their use during this period should almost always be avoided. The possibility that a woman of child bearing potential may be pregnant at time of institution of therapy should be considered. Advise patients if they become pregnant during therapy or intend to become pregnant to communicate with their physicians about desirability of discontinuing the drug.

Meprobamate passes the placental barrier. It is present both in umbilical cord blood at or near maternal plasma levels and in breast milk of lactating mothers at concentrations two to four times that of maternal plasma. When use of meprobamate is contemplated in breastfeeding patients, consider the drug's higher concentrations in breast milk as compared to maternal plasma levels.

USAGE IN CHILDREN: Keep preparations with aspirin out of reach of children. Equagesic®-M is not recommended for patients 12 years of age and under.

PRECAUTIONS ASPIRIN: Salicylates antagonize uricosuric activity of probenecid and sulfinpyrazone. Salicylates are reported to enhance hypoglycemic effect of sulfonylurea antidiabetics. MEPROBAMATE: Use lowest effective dose, particularly in elderly and debilitated, to preclude over sedation. Meprobamate is metabolized in the liver and excreted by the kidney. To avoid excess accumulation, exercise caution in its use in patients with compromised liver or kidney function. Meprobamate occasionally may precipitate seizures in epileptic patients. It should be prescribed cautiously and in small quantities to patients with suicidal tendencies.

ADVERSE REACTIONS ASPIRIN: May cause epigastric discomfort, nausea and vomiting. Hypersensitivity reactions including urticaria, angioneurotic edema, purpura, asthma, and anaphylaxis may rarely occur. Patients receiving large doses of salicylates may develop tinnitus.

MEPROBAMATE: CNS: Drowsiness, ataxia, dizziness, slurred speech, headache, vertigo, weakness, paresthesias, impairment of visual accommodation, euphoria, overstimulation, paradoxical excitement, fast EEG activity.

GI: Nausea, vomiting, diarrhea.

CARDIOVASCULAR: Palpitation, tachycardia, various forms of arrhythmia, transient ECG changes, syncope, hypotensive crisis.

ALLERGIC OR IDIOSYNCRATIC: Milder reactions are characterized by itchy urticarial or erythematous maculopapular rash, generalized or confined to the groin. Other reactions include leukopenia, acute nonthrombocytopenic purpura, petechiae, ecchymoses, eosinophilia, peripheral edema, adenopathy, fever, fixed drug eruption with cross reaction to carisoprodol, and cross sensitivity between meprobamate, mebutamate and meprobamate combromal. Rare, more severe hypersensitivity reactions include hyperpyrexia, chills, angioneurotic edema, bronchospasm, oliguria, and anuria. Also, anaphylaxis, exfoliative dermatitis, stomatitis, and pruritis. Stevens-Johnson syndrome and bullous dermatitis have occurred.

HEMATOLOGIC (SEE ALSO "ALLERGIC OR IDIOSYNCRATIC"): Agranulocytosis, aplastic anemia have been reported, although no causal relationship has been established, and thrombocytopenic purpura.

OTHER: Exacerbation of porphyric symptoms.

DOSAGE AND ADMINISTRATION Usual dose is one or two tablets, 3 to 4 times daily as needed for relief of pain when tension or anxiety is present. Not recommended for patients 12 years of age and under.

OVERDOSAGE Treatment is essentially symptomatic and supportive. Any drug remaining in the stomach should be removed. Induction of vomiting or gastric lavage may be indicated. Activated charcoal may reduce absorption of both aspirin and meprobamate. Aspirin overdosage produces usual symptoms and signs of salicylate intoxication. Observation and treatment should include management of hyperthermia, specific parenteral electrolyte therapy for ketoacidosis and dehydration, watching for evidence of hemorrhagic manifestations due to hypoprothrombinemia which, if it occurs, usually requires whole blood transfusions. Suicidal attempts with meprobamate have resulted in drowsiness, lethargy, stupor, ataxia, coma, shock, vasomotor and respiratory collapse. Some suicidal attempts have been fatal. The following data, reported in the literature and from other sources, are not expected to correlate with each case, considering factors such as individual susceptibility and length of time from ingestion to treatment, but represent usual ranges reported. Acute simple overdose (meprobamate alone): Death has been reported with ingestion of as little as 12 gram meprobamate and survival with as much as 40 gram.

BLOOD LEVELS: 0.5-2.0 mg percent represents usual blood level range after therapeutic doses. The level may occasionally be as high as 3.0 mg percent. 3-10 mg percent usually corresponds to findings of mild-to-moderate symptoms of overdosage, such as stupor or light coma. 10-20 mg percent usually corresponds to deeper coma, requiring more intensive treatment. Some fatalities occur. At levels greater than 20 mg percent, more fatalities than survivals can be expected.

Acute combined overdose (meprobamate with other psychotropic drugs or alcohol): Since effects can be additive, history of ingestion of a low dose of meprobamate plus any of these compounds (or of a relatively low blood or tissue level) cannot be used as a prognostic indicator.

In cases of excessive doses, sleep ensues rapidly and blood pressure, pulse, and respiratory rates are reduced to basal levels. Any drug remaining in stomach should be removed and symptomatic treatment given. Should respiration or blood pressure become compromised, respiratory assistance, CNS stimulants and pressor agents should be administered cautiously as indicated. Diuresis, osmotic (mannitol) diuresis, peritoneal dialysis, and hemodialysis have been used successfully in removing both aspirin and meprobamate. Alkalinization of the urine increases excretion of salicylates. Careful monitoring of urinary output is necessary, and caution should be taken to avoid overhydration.

Relapse and death, after initial recovery, have been attributed to incomplete gastric emptying and delayed absorption.

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The Combined Medical Specialties Unit: An Innovative Approach to Patient Care

Alan Stoudemire, M.D., J. Trig Brown, M.D., Michael McLeod, M.D., Bernie Stewart, R.N., and Jeffrey L. Houpt, M.D.

THE division of illness into medical and psychiatric disorders obscures the fact that these conditions overlap in clinical practice and that assessing the psychological factors that contribute to a patient's illness is an important part of the diagnostic evaluation. In many cases the medical evaluation of such patients is performed in a "rule out organic disease" manner in which the psychological aspects of the patient's condition are considered only after an extended and frustratingly unrewarding medical evaluation. At that point, as is often the case, the psychiatrist is called in to determine a psychiatric diagnosis and to arrange a disposition. Inevitably, the medical and psychiatric evaluations have occurred separately, and the patient (and doctor) is left with lingering doubts about the diagnosis. In retrospect, it is often apparent that, had the psychiatric factors in the patient's illness been considered earlier, much of the medical evaluation might have been avoided or performed more efficiently. Not only could some tests have been deleted, but time and therapeutic efforts could have been directed more appropriately and earlier to the psychological factors affecting the patient's condition. Ideally, the medical and psychiatric evaluation would be performed jointly so as to rapidly assess these various factors from the outset.

Recognition of the need for joint medical-psychiatric evaluation in certain medical conditions led to the idea of a collaborative treatment program in the Departments of Medicine and Psychiatry at Duke University. Such a unit would provide a setting for both evaluation *and* treatment of the patient with an internist and psychiatrist working together throughout the patient's hospitalization from the time of admission. The result of these efforts has been the formation of a joint medical-psychiatric ward called the Combined Medical Specialties Unit (CMSU), which is the newest inpatient unit to be developed at Duke. Examples of patients treated on the ward include:

1) medically ill patients with prominent accompanying symptoms of depression or anxiety — e.g., depression in patients with cancer, rheumatoid arthritis, Parkinson's disease, SLE, ulcerative colitis, or following myocardial infarction;
2) patients with depression or anxiety manifested primarily by physical complaints;
3) patients with complex symptoms posing diagnostic dilemmas that require conjoint medical and psychiatric evaluation — e.g., hysterical conversion reactions;
4) patients with psychophysiologic disorders such as chronic tension and migraine headaches, irritable bowel syndrome, or stress-induced musculoskeletal pain;
5) patients with early dementia or dementia complicated by depression;
6) patients on numerous medications (usually involving psychotropics or analgesics) whose treatment regimen needs inpatient evaluation and alteration.

Registered nurses staff the unit at an intermediate care level; therefore, critically ill patients are initially stabilized on the acute medical wards in the North Division of Duke Hospital before transfer to the CMSU. The only other limitations are that the patients must be age 16 or over and cannot be actively suicidal, homicidal, or otherwise require a locked ward.

Every patient is admitted under the care of a faculty member from the Department of Medicine. The Divisions of Neurology, Rheumatology, Gastroenterology, Endocrinology, Cardiology, Oncology and General Internal Medicine have faculty members actively involved on the ward. Every patient is evaluated *at the time of admission* by a psychiatrist specializing in the psychological aspects of medical illnesses. The internist, psychiatrist, and nursing staff then meet in a joint diagnostic and therapeutic conference to assess the initial results of the medical-psychiatric evaluation and develop a plan of treatment. Attention is devoted not only to identifying the crisis that may have brought the patient to the hospital, but also to helping the patient develop better ways of dealing with the illness following discharge. For example, patients admitted with depression following myocardial infarction are helped to better understand the emotional reactions to their illness and also to participate in an active cardiac rehabilitation program to enhance their self-confidence and overall physical health.

A wide range of services are coordinated through this unit:

1) individual and group psychotherapy;
2) psychopharmacologic therapy;

From the Departments of Medicine and Psychiatry, Duke University Medical Center, Durham, NC 27710.

3) biofeedback (psychophysiologic disorders, relaxation training);
4) neuropsychological testing;
5) hypnotherapy (relaxation and pain control);
6) physical therapy;
7) pain management consultation;
8) behavioral therapy for smoking;
9) sexual dysfunction therapy;
10) vocational rehabilitation counseling;
11) cardiac rehabilitation (Duke University Preventive Approach to Cardiology — DUPAC);
12) occupational therapy;
13) marital counseling;
14) dietary instruction.

Patients whose illness is either caused by or exacerbated by stressful life situations participate in a "stress management" program to facilitate better ways of dealing with anxiety-provoking stress. This program follows an educational approach and is administered by nursing personnel and a recreational therapist. Stress management techniques include assertiveness training, recreational education, physical education, dietary instruction, relaxation training, and programmed physical exercise training through DUPAC. These activities are designed to enhance the patient's overall quality of life despite the debilitating features of an underlying illness.

Each member of the treatment team on the CMSU plays a complementary role in patient care. The patient comes to the unit under the aegis of the admitting internist; therefore, the initial part of the hospitalization tends to focus on diagnostic aspects of the case with the admitting internist directing the diagnostic studies. In the case of patients with psychophysiologic or psychosomatic disorders (e.g., irritable bowel syndrome), the studies are thorough enough to reassure both the patient and the physician that the illness is not life-threatening and does not require surgical intervention. At the same time, the psychiatrist assesses the role of psychological factors, thus expediting the initial evaluation and choice of tests. The internist plays a major interpretive role in explaining to the patient the basis for his symptoms. Initially, patients are generally more receptive to hearing the psychological or psychophysiologic components of their illnesses explained by an internist rather than by a psychiatrist. The internist provides an excellent entree for the psychiatrist to work with the patient in more intensive psychologically-oriented treatments.

The internist continues to support the patient during the transition from diagnostic evaluation to psychotherapeutic intervention. This approach avoids the patient's fear of "being abandoned" by the internist. Health planning for the future is also orchestrated by the internist, including specific instructions related to diet and weight, appropriate exercise programs, elimination of habits such as smoking and drinking, and stress reduction. The patient is gradually encouraged to assume increasing responsibility for his/her health as the time of discharge approaches.

This integrated approach to patient care provides an opportunity for the nursing staff to be directly involved in the initial patient evaluation and in the implementation of treatment plans. The majority of patients admitted to this unit are experiencing some degree of emotional distress at the time of admission. For this reason, it is essential that the hospital environment be perceived by the patient as safe and supportive. The nursing staff uses a modified "*primary nurse*" concept to achieve this goal. At the time of admission, *one nurse* is assigned to each patient and that same nurse is responsible for the nursing-care plan throughout the hospital stay. This method of assignment enhances the development of a trusting relationship between patient and nurse. The primary nurse is therefore able to facilitate communication between the patient and other members of the treatment team. The continuous relationship with the patient also allows the nurse to evaluate the patient's response to treatment and provide support in learning better ways to deal with his illness.

Successful patient care outcome depends heavily on the patient's understanding of how stressful life situations either cause or exacerbate symptoms associated with his illness. The CMSU nursing staff assume a major responsibility for helping patients and families achieve this understanding. This educational process may occur informally with individual patients or more formally in structured educational classes. One example of a formal approach is the stress management program just described.

A psychiatrist evaluates and follows every patient from the day of admission. The initial psychiatric consultation examines the contribution of interpersonal stresses to the patient's condition (e.g., marital or family conflicts), evaluates the presence of depressive illness or disabling anxiety, and assesses possible psychodynamic factors contributing to the clinical situation. The psychiatrist, after the initial evaluation, confers with the internist in the joint diagnostic and treatment conference and assesses the need for individual therapy, group therapy, or psychopharmacologic therapy. Referrals to experts in behavioral psychology are available and are used as determined by the individual needs of the patient.

If the psychiatric component of the patient's illness becomes the primary therapeutic focus, the psychiatrist may become the primary attending physician. The internist at that point remains actively involved in the patient's care from a consulting position. The patient remains on the unit and such an arrangement prevents the disruptive effect of transferring the patient to a psychiatric ward. Patients on the CMSU maintain the same team of attending physicians and consultants, the same nursing staff, and the same bed throughout their hospitalization.

Discussion

The need for the integrated approach provided on the CMSU is underscored by the high prevalence of psychiatric illness in general medicine practice.[1] Fifteen percent of the adult population in the United States meet the criteria for the diagnosis of a psychiatric disorder; of these, two-thirds receive their mental health care within the general medical sector.[2] Conversely, 24 to 80% of patients in psychiatric clinics have significant medical illnesses.[3-5] Patients in whom medical and psychiatric conditions overlap might include: 1) patients with primary psychiatric disorders (e.g., severe depression, personality disorders, anxiety disorders, psychosis) who may have concurrent medical conditions requiring treatment; 2) patients with severe emo-

tional reactions to medical or surgical conditions (e.g., depression or anxiety in reaction to a myocardial infarction, cancer, etc.); 3) patients with stress-related physical symptoms that are primarily psychophysiological (e.g., chronic tension headaches, irritable bowel syndrome); 4) patients with physical symptoms that are imagined, exaggerated, or unconsciously determined (hypochondriasis, conversion reactions); 5) patients whose maladaptive lifestyles and habits incur increased medical morbidity (e.g., noncompliance, cigarette smoking, drug and alcohol abuse, obesity, child and spouse abuse); and 6) patients with severe depression or anxiety as their major underlying problem but who present with physical complaints.

Given the high degree to which medical and psychiatric illnesses are interrelated, it is important for both general medical and psychiatric physicians to have some expertise in diagnosing and treating this spectrum of disorders. Due to the highly specialized nature of medical training and practice, however, physicians tend to vary in their proficiency in correctly identifying problems that are not thought to be within their respective domain.[3, 4, 6-10] Thus, one of the educational goals of this unit is to provide a site in which physicians-in-training can develop greater proficiency in the diagnosis and treatment of these patients.

Another problem, often encountered in medical practice and which this unit attempts to overcome, is the tendency for physicians to dichotomize illnesses into "functional" (psychological) vs. "organic" (physical); this is an inherently artificial split. Psychological and medical conditions are inextricably interrelated. Every medical illness is invariably accompanied by emotional reactions and biological research has begun to demonstrate the neurochemical basis for many of the major psychiatric and psychophysiologic disorders. Moreover, a patient's basic personality determines to some extent how each individual reacts to an acute illness or adapts to a chronic illness. The failure to adapt psychologically can often be the most disabling component of a disease. Helping patients cope successfully with an illness can often be the physician's greatest challenge.

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Pulvules®, 250 and 500 mg

Brief Summary Consult the package literature for prescribing information

Indications and Usage Ceclor® (cefaclor, Lilly) is indicated in the treatment of the following infections when caused by susceptible strains of the designated microorganisms.

Lower respiratory infections, including pneumonia caused by *Streptococcus pneumoniae (Diplococcus pneumoniae), Haemophilus influenzae,* and *S. pyogenes* (group A beta-hemolytic streptococci).

Appropriate culture and susceptibility studies should be performed to determine susceptibility of the causative organism to Ceclor.

Contraindication Ceclor is contraindicated in patients with known allergy to the cephalosporin group of antibiotics.

Warnings IN PENICILLIN SENSITIVE PATIENTS, CEPHALOSPORIN ANTIBIOTICS SHOULD BE ADMINISTERED CAUTIOUSLY. THERE IS CLINICAL AND LABORATORY EVIDENCE OF PARTIAL CROSS-ALLERGENICITY OF THE PENICILLINS AND THE CEPHALOSPORINS AND THERE ARE INSTANCES IN WHICH PATIENTS HAVE HAD REACTIONS, INCLUDING ANAPHYLAXIS, TO BOTH DRUG CLASSES.

Antibiotics, including Ceclor, should be administered cautiously to any patient who has demonstrated some form of allergy, particularly to drugs.

Pseudomembranous colitis has been reported with virtually all broad-spectrum antibiotics (including macrolides, semisynthetic penicillins, and cephalosporins); therefore, it is important to consider its diagnosis in patients who develop diarrhea in association with the use of antibiotics. Such colitis may range in severity from mild to life-threatening.

Treatment with broad-spectrum antibiotics alters the normal flora of the colon and may permit overgrowth of clostridia. Studies indicate that a toxin produced by *Clostridium difficile* is one primary cause of antibiotic-associated colitis.

Mild cases of pseudomembranous colitis usually respond to drug discontinuance alone. In moderate to severe cases, management should include sigmoidoscopy, appropriate bacteriologic studies, and fluid, electrolyte, and protein supplementation. When the colitis does not improve after the drug has been discontinued, or when it is severe, oral vancomycin is the drug of choice for antibiotic-associated pseudomembranous colitis produced by *C. difficile.* Other causes of colitis should be ruled out.

Precautions *General Precautions*—If an allergic reaction to Ceclor occurs, the drug should be discontinued, and, if necessary, the patient should be treated with appropriate agents, e.g., pressor amines, antihistamines, or corticosteroids.

Prolonged use of Ceclor may result in the overgrowth of nonsusceptible organisms. Careful observation of the patient is essential. If superinfection occurs during therapy, appropriate measures should be taken.

Positive direct Coombs' tests have been reported during treatment with the cephalosporin antibiotics. In hematologic studies or in transfusion cross-matching procedures when antiglobulin tests are performed on the minor side or in Coombs' testing of newborns whose mothers have received cephalosporin antibiotics before parturition, it should be recognized that a positive Coombs' test may be due to the drug.

Ceclor should be administered with caution in the presence of markedly impaired renal function. Under such conditions, careful clinical observation and laboratory studies should be made because safe dosage may be lower than that usually recommended.

As a result of administration of Ceclor, a false-positive reaction for glucose in the urine may occur. This has been observed with Benedict's and Fehling's solutions and also with Clinitest® tablet, but not with Tes-Tape® (Glucose Enzymatic Test Strip, USP, Lilly).

Broad-spectrum antibiotics should be prescribed with caution in individuals with a history of gastrointestinal disease, particularly colitis.

Usage in Pregnancy—*Pregnancy Category B*—Reproduction studies have been performed in mice and rats at doses up to 12 times the human dose and in rabbits given three times the maximum human dose and have revealed no evidence of impaired fertility or harm to the fetus due to Ceclor. There are, however, no adequate and well-controlled studies in pregnant women. Because animal reproduction studies are not always predictive of human response, this drug should be used during pregnancy only if clearly needed.

Nursing Mothers—Small amounts of Ceclor have been detected in mother's milk following administration of single 500 mg doses. Average levels were 0.18, 0.20, 0.21, and 0.16 mcg/ml at two, three, four, and five hours respectively. Trace amounts were detected at one hour. The effect on nursing infants is not known. Caution should be exercised when Ceclor (cefaclor, Lilly) is administered to a nursing woman.

Usage in Children—Safety and effectiveness of this product for use in infants less than one month of age have not been established.

Adverse Reactions Adverse effects considered related to therapy with Ceclor are uncommon and are listed below.

Gastrointestinal—Symptoms occur in about 2.5 percent of patients and include diarrhea (1 in 70).

Symptoms of pseudomembranous colitis may appear either during or after antibiotic treatment. Nausea and vomiting have been reported rarely.

Hypersensitivity—Reactions have been reported in about 1.5 percent of patients and include morbilliform eruptions (1 in 100), Pruritus, urticaria, and positive Coombs' tests each occur in less than 1 in 200 patients. Cases of serum-sickness-like reactions (erythema multiforme or the above skin manifestations accompanied by arthritis/arthralgia and frequently, fever) have been reported. These reactions are apparently due to hypersensitivity and have usually occurred during or following a second course of therapy with Ceclor. Such reactions have been reported more frequently in children than in adults. Signs and symptoms usually occur a few days after initiation of therapy and subside within a few days after cessation of therapy. No serious sequelae have been reported. Antihistamines and corticosteroids appear to enhance resolution of the syndrome.

Cases of anaphylaxis have been reported, half of which have occurred in patients with a history of penicillin allergy.

Other—Effects considered related to therapy included eosinophilia (1 in 50 patients) and genital pruritus or vaginitis (less than 1 in 100 patients).

Causal Relationship Uncertain—Transitory abnormalities in clinical laboratory test results have been reported. Although they were of uncertain etiology, they are listed below to serve as alerting information for the physician.

Hepatic—Slight elevations of SGOT, SGPT, or alkaline phosphatase values (1 in 40).

Hematopoietic—Transient fluctuations in leukocyte count, predominantly lymphocytosis, occurring in infants and young children (1 in 40).

Renal—Slight elevations in BUN or serum creatinine (less than 1 in 500) or abnormal urinalysis (less than 1 in 200).

[061782R]

*Many authorities attribute acute infectious exacerbation of chronic bronchitis to either *S. pneumoniae* or *H. influenzae.*

Note Ceclor is contraindicated in patients with known allergy to the cephalosporins and should be given cautiously to penicillin-allergic patients.

Penicillin is the usual drug of choice in the treatment and prevention of streptococcal infections, including the prophylaxis of rheumatic fever. See prescribing information.

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Additional information available to the profession on request from Eli Lilly and Company, Indianapolis, Indiana 46285

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Features for Patients

Practicing physicians and others in North Carolina interested in medical care are encouraged to write articles that will be useful to patients and to the many persons who work with doctors and hospitals. We are urging doctors to make the Journal available in their waiting rooms. Letters from all readers will be of interest to the editor and, when appropriate, will be published in the next available issue of the Journal.

Important Facts About the Menopause

Eleanor B. Easley, M.D.

Would you like to postpone the menopause? Modern medicine has made that option available. It is common knowledge that few women welcome the arrival of the menopause, especially now that reliable contraception has became available. Women's misgivings about it are understandable. There are a number of reasons why it has a bad reputation: it makes some women quite uncomfortable; it tells all women that they are no longer young, a message that is intrinsically threatening.

The way things are, women fare better if they can depend on men. Older women are less secure in that dependence. Postponing the menopause is not a perfect solution but many women have thought it lessened their difficulties. This article tries to provide enough information to help women make competent decisions about managing their own menopause.

The menopause experience is not the same in different women. For one person it may be a considerable ordeal; for another, no problem. The differences may be related to the tempo and extent of the primary physiologic process, since variability is known to occur in different individuals. Doctors believe two additional factors are important in producing severe or mild menopausal symptoms: a woman's basic personality, and the environmental factors and situational stresses to which she is subjected.[1] All this is to say that how any woman fares at the menopause depends not only on changes inside her body but also on her total life situation. If she is happy and reasonably secure, everything — including the menopause — will bother her less. Each woman knows best her own circumstances and how she herself feels. This makes her a better judge than anyone else, even her doctor, about the options now available to her during the menopause.

Circumstances Today Increase a Woman's Need for Understanding

Effective treatment for the menopause, based on important new understanding, has became available during the past half century. Even now, though, controversy persists among doctors about the advisability of using the new treatments. There are good reasons why doctors disagree about this and many other subjects. Nearly always, the best information we have is incomplete. There's no way to know what new and *maybe* better information will be discovered next year. Improved medical practices evolve gradually by trial and error. Doctors tend to be cautious and slow to change because they know that in the process it is impossible to avoid *all* mistakes. That they disagree among themselves and (like politicians) argue endlessly creates a hardship for patients. Confronted by different advice from different doctors, what is a patient to do? Her confusion usually is worsened by newspapers and magazines which tend to present anything new or spectacular. After all, their objective is to sell newspapers and magazines! Very often published materials are incomplete, premature and biased. At times even misinformation is widely publicized; and retractions, if made at all, are never in the headlines. All these considerations make a woman's *informed* participation very desirable.

Menopausal Physiology and Its Aftermath

Menopausal physiology, that is, the *pattern* of changes inside the body, is pretty much the same in different women. I repeat for emphasis, however, that there are individual differences in the extent of change and how fast it occurs.

A girl child is born with roughly a million eggs in her two ovaries. Most of them wither and are wasted. Only a relative few mature fully to make pregnancy possible. Hormone-producing cells surround the egg cells and also function to make pregnancy possible. Estrogen hormone makes the lining of the uterus grow and progesterone hormone makes it secrete nourishing fluid so that a fertilized egg can implant. If there is no fertilized egg, the uterine lining peels

From the Durham Women's Clinic, 1821 Green Street, Durham, NC 27705.

Illustrations by Ernest Craige, M.D.

off and comes out of the uterus as a menstrual period.

When all the egg cells and hormone-producing cells in the ovaries are gone, have been used, or have withered, menstruation stops. The word menopause means, simply, no more menstruation.

Having run out of egg cells does not bother most women. Very few menopausal-age women wish to get pregnant. And nearly all women are happy to be rid of the nuisance of menstrual periods. It is decreased production of the ovarian hormone, estrogen, that causes menopausal distress. This happens because estrogen has effects all over a woman's body in addition to its effects on the uterus.

At adolescence, it is estrogen that produces the changes that make a girl's appearance different from that of a child or a man. A favorite expression is that a young girl "blooms." Estrogen changes not only how she looks but also, and profoundly, how she feels. Abundant estrogen produces "feelings of well-being" — exuberance, vitality, and since nature's objective is mating and pregnancy, she feels sexy — "boy crazy" it's called in young girls.

The declining estrogen levels of the menopause reverse the adolescent process. Once again, keep in mind that the rate and extent both of hormone and body changes vary greatly in different women, depending possibly on their heredity. Two body compensatory mechanisms resist the estrogen hormone deficiency. Cells all over the body produce small amounts of estrogen by converting adrenal and male hormones, and the pituitary gland becomes overactive in an effort to increase ovarian estrogen production. One important function of the pituitary throughout life has been to regulate ovarian function. Whenever estrogen levels have become low, the pituitary has signaled the ovary with a hormone of its own to make more. The system works much like a thermostat regulating a furnace. At the menopause, the thermostat stays turned on. Pituitary hormone levels go sky high and are associated with the symptom most characteristic of menopause — hot flashes. The ovary responds to the high levels so long as it can at all, but with smaller and smaller amounts of estrogen. This erratic estrogen production causes the irregular menstruation which often occurs before the periods stop completely.

Changes due to estrogen deficiency are all over the body but are greatest in the genital organs.[2, 3] The breasts tend to become flabby. The vaginal surface thins, predisposing to vaginitis and discomfort during intercourse. The uterine supports weaken, and prolapse or dropping of the uterus characteristically first becomes apparent at the menopause.

Skin and hair become dry. Bones lose calcium. For one woman in four — at this time it cannot be reliably predicted which one — so much calcium is lost that in later years the bones of the spine tend to collapse and broken hips and wrists occur fre-

"Her confusion usually is worsened by newspapers and magazines, which tend to present anything new or spectacular."

quently. This severe calcium loss is called osteoporosis.[4, 5] Osteoporosis of the spine produces "dowager's hump" and often back weakness and discomfort.

Blood cholesterol patterns change unfavorably. A recent discovery is that estrogen produces the favorable blood cholesterol pattern that protects women from having as many heart attacks as men.[6] It has been known for a long time that, after the menopause, heart attacks in women become more frequent.

For centuries *visible* physical deterioration of variable degree has been observed in menopausal women. For a while the aging process seems to accelerate; and in some women, at least, specifically feminine attributes retrogress.[7-9]

Usually it surprises people to learn that male hormones, androgens, are produced normally in women by both the ovaries and the adrenal glands. After menopausal ovaries can no longer produce estrogen, they continue to produce androgens. There is some evidence that they produce increased amounts because of the pituitary hyperactivity already mentioned. The increased facial hair growth that occurs in some postmenopausal women is attributed to either increased testosterone (the most potent androgen) or possibly the same amount of it unopposed by estrogen.

Whereas menopausal physical changes take a few years — or some of them many years — to develop, women often report changes in how they *feel* even before the menstrual periods stop. The consensus is that they don't feel as well as they did formerly. Beyond that there's little agreement. Some women claim to feel terrible. Some scarcely notice a difference. Doctors, along with everybody else, have trouble interpreting women's testimony, since it is so variable. The symptoms most commonly reported in addition to hot flashes are nervousness, sleeplessness, tiredness, lassitude, joint pains, depression and irritability. The latter is at times so severe as to amount to downright meanness. A notably troublesome, frequent symptom is loss of any desire for sexual activity — loss of normal libido. Quite often a woman will say, "I've got so I don't care a thing about sex." One widow said, "The menopause must be God's answer to women who've lost their husbands. I don't mind any more not having a man."

A mistaken idea common among women is that when they "get through the menopause" everything will be all right. It is true that the hot flashes usually subside — the pituitary gives up after a while and elevated testosterone levels tend to restore the libido. But it is important to realize that the critical estrogen deficiency is permanent and that the changes resulting from it are to some extent progressive.

Estrogen has been available for medical use since the 1930s. It was first used extensively for treating menopausal women during the 1960s. On estrogen replacement most women reported that they felt better, and most people thought the women taking it looked better. Unquestionably it stopped osteoporosis and genital atrophy. There was argument as to whether or not it slowed the aging process. Many thought it did, somewhat.[7-9]

After the experiences of the 1960s, there is no longer any argument about estrogen deficiency being the predominant cause of menopausal difficulties. Yet, in spite of this evidence of its effectiveness, controversy persists about the advisability of using it. The story of why is very interesting. Medical progress and practice are all mixed up in it.

Medical Progress and the Menopause

Medical progress is responsible for the menopause problem as we know it today. By controlling many and more causes of death, it has produced world overpopulation and reversed the world's need for children. These changes have transformed women's lives. Women now have surplus time that formerly went into child production and related activities, and they have surplus time because they live longer. Many, many women used to die, often in childbirth, before they reached the menopause. Now on the average a third of women's lives comes after the menopause.

Clearly what the world expects of women is different nowadays. To use up their extra time, women have turned to work outside the home, all kinds of it, and gradually they are coming to be accepted. Men have tended to resist women's working outside the home without seeming to understand why the women were doing it. Women, in turn, have been unrealistic about what they couldn't do because of their lesser strength, and why in some situations they were a nuisance, because as female creatures they were disturbing to men and disruptive of men's work.

In their public work especially, women need reasonably dependable good health and to be minimally handicapped if at all by any kind of female incapacity — what grandma called "female trouble." During the past half century, medical progress and changed gynecological practices have contributed enormously to women's well-being and helped them to adapt to their present day needs. The availability of effective treatment for the menopause is one such contribution. The peculiar persistence of arguments about menopausal management almost surely results from an important mistake in early estrogen use. Here is how it came about.

The Estrogen Use Cancer Risk Controversy

It is a true calamity that sometimes young women require removal of the uterus, tubes and ovaries because of dangerous disease. In such cases, menopausal changes are devastating. Estrogen replacement therapy was studied early in these young patients and the results were spectacular. Except, of course, that they couldn't have babies, estrogen re-

stored the young women to preoperative well-being.[8]

During the decade of the 1960s, the idea caught on that menopausal women, also, would be benefited by estrogen replacement. Indeed they were and it came into extensive use. In 1975 came the bombshell: several studies indicated that estrogen use had increased the incidence of cancer of the lining of the uterus — the endometrium.[10, 11] The risk had been missed, because the early trials had been done on young women who had had hysterectomies!

Arguments raged. The risk was at first denied, blamed on bad statistics, but the studies were right.[12] The incidence of adenocarcinoma of the endometrium was increased in estrogen users. Newspapers spread the bad news. The Food and Drug Administration (FDA) required with every estrogen prescription a package insert to warn women about the dangers of taking it.[13] The inserts said nothing about estrogen's good effects, and it is now the consensus that they distorted the total situation.[14] Women thought automatically: "If there are no benefits worth mentioning, why did doctors give us this dangerous stuff?" The very fact of there being inserts told women they could not trust doctors. And where else could distraught women turn for advice but to doctors? Many women flushed their estrogen pills down the toilet and regarded doctors with uneasy suspicion.

The early figures terrified women. The word "cancer" makes people lose their cool. Women were told that the endometrial cancer risk was about four to eight times greater in estrogen users. They were *not* told that even with the estrogen-produced increase, endometrial cancer was relatively uncommon, caused relatively few deaths, and that it was a treatable disease. The American Cancer Society predicted 192,500 cancer deaths in U.S. women during 1981; and of these that 3,100 (1.5%) would be from endometrial cancer.[15] Keep in mind that not all endometrial cancers are caused by estrogen replacement. Many occur spontaneously, and there is recent evidence that the spontaneous ones are more invasive and less curable than the estrogen related ones.[16] The American Medical Association's Council on Scientific Affairs' report of January 21, 1983 states: "Estrogen use does significantly increase the incidence of adenocarcinoma of the endometrium but it does not increase mortality from the disease." For comparison, breast cancer is expected to cause 36,800 deaths and lung cancer 28,000. Many studies show that estrogen does not cause breast cancer[5, 17, 18] or any other cancer except endometrial. Estrogen *will* make some breast cancers grow faster. Tests are available to show which breast cancers contraindicate its use. Sometimes high blood pressure, phlebitis and gallbladder trouble make estrogen use unwise. Estrogen's favorable effect on cardiovascular disease in general probably outweighs its sometimes adverse effect on blood pressure.[16, 18]

It is pointed out with increasing frequency that osteoporosis is a worse threat than endometrial cancer. By age 80, 40% of white women have suffered broken hips and 34% have died of them within six months.[4, 5] Black women rarely develop osteoporosis.

The Cancer Risk From Estrogen Use Is Avoidable

After the 1975 bad news about the estrogen cancer risk, doctors learned almost immediately from other published medical studies that they could avoid it by using a second ovarian hormone, progesterone. During natural menstruation, progesterone, in addition to making the endometrium favorable for pregnancy, produces other important changes which cause it to come away completely with menstruation — leaving the interior of the uterus clean. Some doctors had been using the two hormones together for 10 years or more. In their cases, no endometrial cancers had developed, *and no breast cancers!* In their control patients not on estrogen, there had been several breast cancers![19, 20]

New information continues to accumulate rapidly about estrogen-progesterone dosages and schedules.[21] It offers hope to the many women who found the early progesterone regimens too unpleasant to be acceptable. Progesterone usually causes a return to menstruation and sometimes uncomfortable menstrual feelings called molimina. Women who feel much better with estrogen replacement are willing to put up with the bother of menstruation, but some give it up because of the bother. For any woman who has had a hysterectomy, there is no need for progesterone to prevent uterine cancer and no problem of a return to menstruation. Without doubt it is an advantage to a menopausal woman to be minus her uterus. Some doctors have advocated "prophylactic hysterectomy" for them.[22, 23] This idea is too radical for acceptance at this time but a few menopausal women manage to get hysterectomies done on other pretexts.

Women and doctors have been advised repeatedly that the smallest estrogen dose for the shortest time is the best policy. That advice would seem downright misleading. When estrogen doses are too small or if estrogen use is discontinued, all the unfavorable effects of estrogen deficiency promptly recur and progress.[5]

Psychosexual and Psychosocial Considerations

Doctors believe that there are psychologic and adjustment problems superimposed on the physical changes already described and that they are important. The menopause: (1) erodes a woman's self-esteem, and (2) worsens marital sex adjustment strains.[22] Male badinage to the contrary notwithstanding, women are not dumb enough to miss being aware of both these problems — and afraid of them!

Life problems that can be neither

"... a young girl 'blooms.'"

solved nor accepted make people sick. Such illnesses are called psychogenic. Doctors believe both physical and psychogenic factors contribute to the menopouse syndrome. They have never been able to agree about how much each contributes nor about where the interfoce lies between the two. But the point to be made now is that the psychogenic contributions are important. A further point to be emphosized is that women's reactions to the menopause are reasonoble ond realistic — based on observation and experience. The problems of the menopause are inherent to it. It is for a woman a genuine stressful life crisis! She con adapt to it better if she has the understanding support of family, friends, and doctors.

The most common serious psychologic reaction to the menopause is depression. The common precipitating factor of a depressive reaction is some kind of significant loss. A menopausal woman correctly perceives that she has lost a significant amount of her volue as a female individual. Her potential for pregnancy is gone (no matter that it would be inappropriate to use it!), and her value as a sex partner is impaired.

It is reasonable to compare the effect of the menopause for a woman with the effect of forced retirement for a man. His social contribution is productive work; ond when he is retired, his usefulness and prestige both plummet. Women's intrinsic sociol value, femaleness, plummets ot the menopouse. It is further worth noting that whereas retirement age is 65 (and may be moved to 70), the averoge age of menopause is 47 (the range is 40 to 55). The final blow is women's longer life expectancy. They face more years than men of diminished social value. And being no longer young means soon to become old!

Being old, per se, male or female, in our youth-oriented culture, is not a pleasant experience. We have so mony oldsters around — thanks ogoin to medical progress — that they hove become a nuisance. Longevity olong with inflation is about to bankrupt the Social Security system. Younger workers are coming to resent the increased amounts they are required to pay into it. We ore reminded often that oldsters were once valuable citizens but the fact keeps re-emerging that nobody likes to pay for a dead horse. (The modern equivalent, a wrecked automobile, does not have the same meaning: insurance pays for it.)

Both society and the individuals involved are benefited if postmenopausal women find jobs and continue to work. Being busy and useful improves one's self-image. It is better psychotherapy if the work is interesting and the wages adequate, but any kind of work is better than none. Fortunately, women's work prospects are improving. For postmenopausal women the E.R.A. and equal pay for equal work would have been a good thing.

The Menopause and Marital Adjustment

Little further elaboration would seem necessary about the menopause being a potential marriage problem, since it has been mentioned already that associated with estrogen deficiency, many (perhaps most) menopausal women have decreased libidos and later have vaginal dryness which makes intercourse uncomfortable.[24] In addition, at least some of them will be feeling irritable, nervous, discouraged, and tired from being kept awake at night by hot flashes. That most women recognize their predicament as unsatisfactory is not enough to correct it.

In the meantime, no such changes are affecting the husband. Men's sexual and reproductive capacities (albeit mildly attenuated) remain intact well beyond middle age. The average middle-aged husband goes right on producing millions of sperm per day and abundant male hormone. And this built-in male reproductive physiology continues to impel him toward sexual activity. The evidence is abundant that it is a very strong driving force. It has became almost commonplace for men to desert menopausal wives for younger women.

The difficulties intrinsic to the situation are worsened by lack of understanding and inability to communicate. What sex education we have had has not taught either sex how the other sex feels and has not taught people to talk about sex — male to female or generation to generation. Without understanding, individuals of all ages caught up in sex-derived problems blunder and suffer, to some extent unnecessarily. Adult sexual behavior, until recently semi-covert, has long provided evidence that monogamy strained human sexual inclinations. And that it was unacceptable to some men has been tacitly accommodated. Ignoring this evidence to the contrary, the establishment has promoted the impression that monogamous marriage is a satisfactory answer to human sexual needs. To this day, at marriage, young women are led to anticipate faithfulness from their husbands and a permanent relationship. In the event of marriage trouble, the institution is absolved and the involved individuals are held responsible. An astute doctor (Renshaw) has advised other doctors: "Each of us must confront in our patients and ourselves the fact that partner choice in Western civilization is monogamous, but sexual feelings are not. These may be aroused by many persons. . . ." If the marriage partnership component is sturdy and, particularly if the spouses have learned to talk and compromise, they should be able to resolve their difficulties. This portion of the discussion results from the

" . . . depression and irritability . . . downright meanness."

belief that a clear understanding helps that process.

Estrogen Replacement Is Again a Viable Option

During the 1960s, doctors were told that they were negligent if they did *not* prescribe estrogen. The slogans were "estrogens forever" and "feminine forever." Then it was emphasized that if women were to live many years after the menopause, it was desirable to keep them competent, comfortable and amiable during those later years.[26, 27] That idea is re-emerging and medical research is putting the estrogen risk-benefit ratio back into reasonable perspective.[16] Even estrogen's prophylactic use for women with few menopausal symptoms is being reconsidered.

At this time the belief grows that the estrogen cancer warnings have been overdone and that women with distressing symptoms would have been significantly better off with continued estrogen use than they have been without it.[16] To help women who need estrogen get over the fear of using it was the single most important reason for writing this lengthy discussion. Many women gave up estrogen because of worry caused by the FDA inserts. The average woman had no way of knowing that many doctors judged the inserts to be both biased and incomplete. An astute doctor critic wrote in January 1979: "... It seems that the primary reason that the FDA commissioner issued this order [for package inserts] is his desire or need to absolve himself and his agency of all responsibility in case cancer develops in anyone taking estrogen. ..."[14]

At this time it seems reasonable to ask, "Why *not* postpone the menopause?"

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Medical Care and Entitlement in the Veterans Administration

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The Veterans Administrotion (VA) medicol core system is lorge ond complex. Access to VA medicol core is guoronteed to oll honorobly dischorged veterons who need, but connot offord, heolth core. The VA provides medicol core ocross the entire spectrum of heolth core options: ocute inpotient hospitol core, episodic ond longitudinol outpotient core, ond intermediote ond chronic nursing home core. Our own experience indicotes thot mony veterons ore not owore of the brood scope of medicol benefits potentiolly ovoiloble to them. Conversely, mony ore olso poorly informed obout restrictions ploced on certoin ospects of VA medicol core by the Congressionolly mondoted entitlement system.

At times, the intricocies of the entitlement system ond occess to VA medicol core confuse potient ond physicion olike. The purpose of this report is two-fold. First, in o brood overview, we will simplify ond summorize the entitlement lows ond explore how entitlement priorities interoct with, ond determine the response of, the medicol core system. Obviously, in the process of simplifying o complex entitlement network, detoils ond nuonces of eligibility will be lost. Second, we will describe briefly how one goins occess to VA medicol core for inpotient, outpotient or nursing home core.

Eligibility Guidelines

While entitlement rules seem lobyrinthine, they con be simplified in o generol woy. The mojor entitlement cotegories ore listed in toble 1. The entitlement system is hierorchicol ond, in port, is offected by the veterons' socioeconomic conditions. Veterons ore considered to be "Service Connected" when they hove on illness or disobility thot wos ocquired or recognized while they served in the militory ond for which they ore compensoted. The designotions "Prisoner of Wor" ond "World Wor I Veteron" ore self-evident. Veterons with severe or disobling illness moy be eligible for speciol benefits thot enoble them to be cored for ot home. Veterons receiving these benefits, colled Aid ond Attendonce or Housebound Benefits, worront high priority in the entitlement system. Any honorobly dischorged veteron who served for o sufficient time in the militory is cotegorized os "Non Service Connected" (NSC). These veterons receive lower priority in the entitlement system but ore eligible for mony benefits under speciol medicol or economic circumstonces.

Becouse oll potentiol benefits moy not be ovoiloble to oll veterons, questions often orise regording who is eligible for whot. Severol frequently used benefits ore listed in toble 2. Strotificotion by the specific eligibility cotegories indicotes whot benefits ony given veteron is entitled to receive.

Hospitalization

Any veteron requiring ocute hospitolizotion should seek odmission to the VA Medicol Center (VAMC) in his Primory Service Areo (see below). If speciolized diognostic or theropeutic services ore required but unovoilable locolly, the veteron con be tronsferred to onother VA to complete the diognostic evoluotion or theropeutic progrom. Veterons who ore NSC ore entitled to ocute hospitolizotion if they ore unoble to offord privotely provided medicol core. Of course, ony veteron with emergency medicol needs tokes priority over oll other veterons, regordless of eligibility clossificotion.

Outpatient Care

Outpotient core in the VA medicol core system includes severol components with differing entitlement requirements. *Acute episodic medicol* core is provided to oll veterons irrespective of eligibility cotegory. At o minimum, episodic core includes evoluotion of ony veteron for ony medicol problem to determine whether hospitolizotion is required for diognosis or theropy. If hospitolizotion is not necessory, the veteron will be odvised concerning his eligibility for longitudinol outpotient core in the VA. At o moximum, episodic core includes diognostic evoluotion ond treotment of ony ocute medicol problem. For exomple, o veteron with symptoms of ocute prostotitis might be evoluoted diognostically by physicol exominotion ond urinolysis; treoted ocutely with oppropriote ontibiotics, sitz boths, etc; seen in follow-up once or twice; ond, if the problem is resolved, returned to the core of his locol physicion.

Every veteron is ot leost entitled to hove ony symptom or problem evoluoted ot the VAMC in his Primory Service Areo (see below). This evolu-

Table 1. VA Eligibility Categories

Service Connected Disability	SC
Prisoner of War	POW
World War I Veteran	WWI
Veteran Receiving Aid & Attendance or Housebound Benefits	A&A/HB
Non Service Connected	NSC

From the Ambulotory Core Section ond the Center for Heolth Services Reseorch, Durhom VA Medicol Center, ond the Division of Generol Internol Medicine, Duke University Medicol Center, Durhom, NC 27710

Stotements mode by the outhors concerning issues of entitlement represent their own interpretotions of o complex scole of entitlement criterio These simplified interpretotions do not encomposs oll the intricocies of the entitlement system nor ore they endorsed by the Veterons Administrotion.

tion is provided in the hospital's outpatient clinics in the areas designated as "Admitting," "Triage," or "Screening Clinic," or in the Emergency Room if the problem is life-threatening.

Longitudinal outpatient care represents a commitment by the VA to provide comprehensive primary and/or specialty care to eligible veterans. This care is permanent, life-long, and includes all necessary physician care, diagnostic services, and therapeutic needs in the form of medications and supplies. Only veterans in specific eligibility categories are entitled to longitudinal outpatient care (table 2): veterans who are 50% or more service connected (SC); less than 50% SC but needing life-long care for their service connected problem, for example, a veteran who is 10% SC for hypertension; POWs; WWI veterans; veterans receiving Aid and Attendance or Housebound Benefits. As a general rule NSC veterans are not eligible for permanent, longitudinal outpatient care.

Temporary outpatient care is available to NSC veterans under certain circumstances. If the outpatient care is a temporary extension of inpatient hospital care, the NSC veteran may be followed in the clinic to assure that his medical condition remains stable during the transition from hospital to home or to allow the veteran time to arrange private medical care. Occasionally, the NSC veteran might also receive temporary outpatient care for an acute illness if outpatient management will obviate the need for acute hospitalization. Under these circumstances, temporary outpatient care can be provided for up to 12 months. Under extreme circumstances seriously ill veterans or indigent veterans without local options for medical care may receive outpatient medical care for extended periods of time.

Table 2. Benefits Available by Eligibility Category

Benefit	Eligibility Category					
	SC ≥50%	SC* <50%	POW	WWI	A&A or HB	NSC
Hospitalization	+	+	+	+	+	+
Outpatient Care	+	+	+	+	+	−†
Nursing Home Care	+	+	−‡	−‡	−‡	−‡
Medications	+	+	+	+	+	−†
Prosthetic Items	+	+	+	+	+	−‡
Eye Glasses	+	+	+	+	+	−‡
Dental Benefits	+	+	+	−‡	−‡	−‡
Travel to Closest VA	+	+	+	+	+	+

\+ indicates YES, eligible for benefit
− indicates NO, not eligible for benefit
* eligible only for SC condition, otherwise same as NSC
† eligible only to obviate the need for hospitalization or for post-hospital care
‡ must be hospitalized or have a need related to the illness causing hospitalization

Nursing Home Care

Not all veterans are eligible for community based nursing home care under all circumstances (table 2). Veterans with a service connected disability are entitled to nursing home care when necessary for the management of their specific service connected conditions. Veterans who require nursing home care for a problem other than their service connected condition have the same eligibility as the NSC veteran. Nursing home care is available to POWs, WWI veterans, those receiving Aid and Attendance or Housebound Benefits, and NSC veterans only when nursing home placement directly follows a period of hospitalization. Under these circumstances and for these eligibility categories, veterans may receive a maximum of six months nursing home care at VA expense.

Ancillary Medical Benefits

Free medications and supplies, prosthetic items, and eyeglasses are available to all veterans except as noted in table 2. Non service connected veterans may receive medications from the VA pharmacy only when they are temporary outpatients. Non service connected veterans are only eligible for prosthetic items when this need arises as a result of hospitalization. For example, an NSC veteran who required amputation of a limb as a result of a medical condition or trauma is eligible to receive a prosthetic limb because this need occurred during hospitalization. Only veterans in specified eligibility categories are entitled to receive outpatient dental benefits: 100% SC veterans, those specifically service connected for a dental problem, and former POWs who were incarcerated for six months or longer. Veterans in other eligibility categories are entitled to dental care only during hospitalization. All veterans are entitled to receive a fixed rate reimbursement for travel expenses incurred during transit to the VAMC in their Primary Service Area.

Primary Service Areas

Primary access to VA medical care is gained by contacting the VAMC that serves the county in which the veteran resides. As figure 1 indicates, most of North Carolina is divided among four VAMCs located in Asheville, Durham, Fayetteville and Salisbury. The counties included in each VAMC's Primary Service Area are indicated by the boundaries drawn on the map. For example, the three contiguous counties of Moore, Chatham and Randolph are served by different VAMCs: Fayetteville, Durham, and Salisbury, respectively. The Primary Service Areas for several VAMCs cross state boundaries. For this reason some North Carolina veterans are served by VAMCs in other states. Ten counties in the northeastern corner of

the state are served by the VA in Hampton, Virginia. The four northwestern counties of Alleghany, Ashe, Watauga, and Avery are served by the VA at Mountain Home, Tennessee. Finally, veterans in Union County on the South Carolina border should go to the Columbia VAMC.

Not all VAMCs have all medical or surgical specialists on their staffs nor access to all specialized diagnostic tests. Veterans residing in one Primary Service Area might need referral to other medical centers in the district for certain consultations or tests. For example, a veteran residing in Sampson County with coronary artery disease might be referred by his physician (or go on his own initiative) to the Fayetteville VAMC (figure 1). If the veteran required cardiac catheterization, he would probably be referred by the Fayetteville VAMC to the Durham VAMC for this procedure. After the diagnostic and therapeutic interventions were completed, the veteran would be returned to the care of his private physician, or to the Fayetteville VAMC, for his longitudinal outpatient care.

Access to VA Medical Care

Having discussed the issues of Primary Service Area, eligibility guidelines and available medical benefits, the only remaining issue is that of accessibility. The most direct approach to VA medical care is for the veteran to go to the VAMC in his Primary Service Area. The veteran's symptoms or problems can be evaluated, usually in the "Admitting" or "Triage" areas, and an appropriate disposition made. Alternately the veteran might be referred to the VA by his personal physician. The veteran's care will be expedited when the private physician sends pertinent clinical information with the patient and/or calls the admitting physician at the VAMC. For veterans who do not live near the VAMC in their Primary Service Area, an unscheduled visit to a Triage Clinic may be inconvenient or impractical. Under these circumstances either the veteran, the local VA benefits representative, or the veteran's private physician should complete and mail an application for care to the VAMC in his Primary Service Area. The application form requests information such as the type of care sought, for example, hospitalization or outpatient care; the patient's eligibility category; and the symptom or problem that requires attention. This method of accession is only appropriate for elective problems. Veterans with emergency medical problems should be seen in the Emergency Room of the nearest VAMC if the patient is stable enough to travel the distance.

More detailed questions about eligibility or benefits can be answered by the Medical Administration Service at the local VAMC. Specific questions can only be answered accurately when the veteran's eligibility category is known. Sociaeconomic questions are appropriately referred to the VA Social Work Service when VA medical benefits are an issue. For NSC veterans especially, the local city or county Department of Social Services should also be consulted.

Finally, we reiterate that under *extreme* circumstances, seriously ill or indigent veterans may receive whatever medical care they need regardless of their eligibility category.

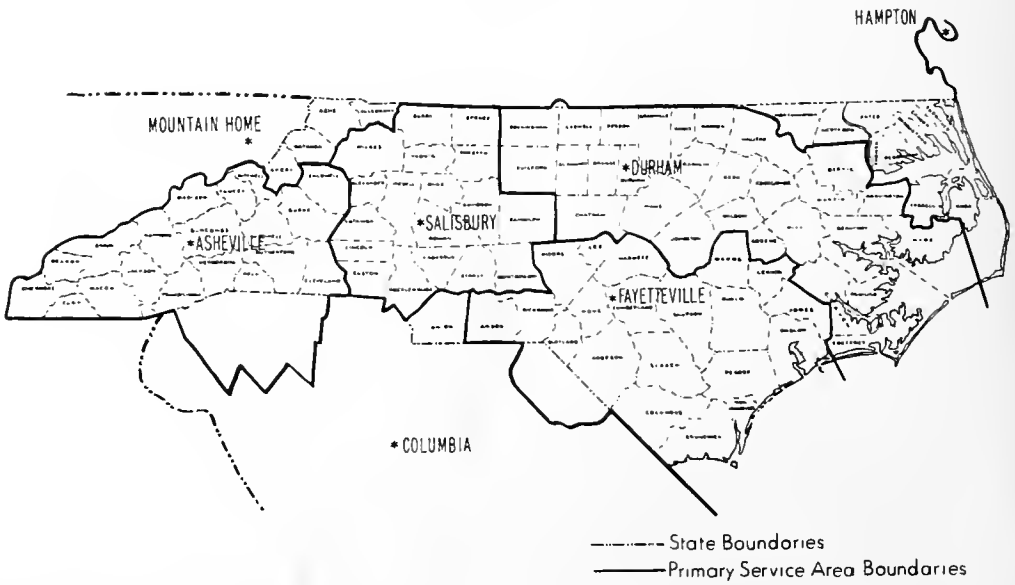

Figure 1. Veterans Administration Primary Service Areas for North Carolina

Home Safety for the Elderly

There are over 26 million people in the United States over the age of 65. Of these, 95 percent live at home. Elderly people in general do better in their own homes and should remain there for as long as reasonably possible.

Injuries among the elderly are very common. For example, approximately 60 percent of all elderly living at home have fallen — some falls have resulted in serious injury.

There are several reasons for increased susceptibility to injury among the elderly. Health problems such as high blood pressure, irregular pulse, and decreased vision occur in many older people. Also, dizziness, especially upon rising too rapidly, is common. As we age our limb coordination is reduced and often stiff arthritic joints develop. The elderly are also slower to respond to signals and sometime misperceive environmental dangers making judgmental errors. This occurs especially if the person is depressed.

Thoughtful preventive action on the part of both the elderly and their families may mean safety and happiness for both.

Regular visits with the physician to monitor any health problems are of course very important. Following the physician's directions will insure proper use of drugs. Misuse of medications can make the elderly more injury prone.

Remembering to rise to an upright position slowly, refraining from working with arms above the head and from storing foods and medicines in high cupboards may help avoid dizziness.

Several changes in the home will make safety part of everyday living.

General household safety is improved by keeping all areas — especially hallways and stairways — well lighted. Light switches at both the top and bottom of stairs are helpful and night lights will help improve lighting.

Additional suggestions for general safety include installing sturdy handrails on both sides of the stairway, tacking down carpet on stairs, removing throw rugs that tend to slide, using double-faced tape to secure rugs. Arrange furniture, electrical cords, and other objects so they are not obstacles. Keep emergency phone numbers written in large print by the phone and plan an emergency exit in case of fire. One sturdy lock on the door that can be opened quickly in case of an emergency is preferred to several less efficient locks. Keep outdoor steps and walkways in good repair.

The kitchen and bathroom are the most unsafe areas in the home. To prevent scalding, be sure the water heater thermostat is appropriately set. When working in the kitchen, keep pan handles turned toward the back of the stove and wear short or close-fitting sleeves to prevent burns. Cleaning supplies should be clearly marked and stored separately to avoid misuse.

In the bathroom, the use of grab bars in the tub and shower and at the toilet will help prevent falls. Also, mats or non-skid strips in the bathtub and shower will increase safety from falling.

To avoid their misuse, medicines should be clearly marked. It may be helpful for someone to measure out and package daily doses. Unused prescription medicines should be discarded when the illness they are prescribed for is over.

Arranging a "buddy system" will insure contact with other people on a regular basis. The "buddy system" involves a number of people calling one another at specific times of the day.

These suggestions and many other changes can be made to increase the safety of the home for the elderly, thus allowing many of them to remain at home. The responsibility for these changes lies with both the elderly and their family.

The family that develops a helpful attitude and recognizes that simple adaptations in the home may be necessary will foster happy, rewarding relationships. The feeling of being appreciated, wanted and needed contributes to the maintenance of total well-being and safety for all.

The older person can also nurture a climate of mutual respect by accepting the limitations imposed on them by age and by visiting the doctor regularly and following the doctor's directions. The elderly can feel useful if ways to help the family group are found. By understanding and appreciating the precautions taken in their behalf, they will help make safety a practical part of everyday living.

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Solar Energy: Good or Bad?

Claude S. Burton, M.D., Peter W. Heald, M.D., and J. Lamar Callaway, M.D.

As thousands of North Carolinians follow the sun to the fields and beaches we can expect to see another epidemic of sunburns and other photo exacerbated illnesses. In fact, a sure sign of spring in the Dermatology Clinic is the patient with sunburn. Having wintered under cover, the skin is in no condition to handle that first spring trip to the beach or that first weekend in the garden. This is especially true for North Carolinians who are sun-sensitive because of their Northern European ancestry. Now is the time for patients to learn to protect themselves from excessive ultraviolet light. The patient with severe sunburn or skin cancer is apt to be a careful listener to advice that will protect him in the future.

Suntanning has became very fashionable in the last few decades; coincident with this trend there has been a steady increase in the incidence of skin cancer. Cancer is not the only hazard associated with ultraviolet light. Several diseases are worsened with sun exposure including lupus erythematosus, porphyria, and the large but uncommon group of photodermatoses. Ultraviolet light is also responsible for aging and wrinkling of the skin, telangiectasia, atrophy, and the appearance of "age spots." Exposure to sunlight will also produce rashes in certain patients taking antibiotics (tetracyclines, griseofulvin, sulfonamides), antihypertensives (hydrochlorothiazide, lasix), and oral hypoglycemics (tolbutamide, sulfonylureas). While we have no intention of recommending that our patients and their families avoid the healthy pursuit of outdoor activities, we do condemn those who pursue beauty in tanning parlors. A large unregulated industry, these tanning centers expose individuals to the hazards of light without the benefits of the out-of-doors.

Of course, sunlight is not altogether evil. By inducing the synthesis of Vitamin D in the skin, sunlight is helpful in preventing bone disease. Blue light converts toxic bilirubin in infants into a non-toxic metabolite, substantially reducing the risk of kernicterus. As dermatologists, we use ultraviolet light as a form of therapy for many skin diseases including psoriasis, cutaneous lymphoma, vitiligo, eczema, and alopecia areata. Careful supervision is required in all instances.

We advise gradual increases in exposure to the sun, the use of hats and protective clothing (when feasible), and the avoidance of midday sun; however, sunscreens are the cornerstone of protection from ultraviolet light. Two major variables to recognize in dealing with sunscreens relate to the base in which it is prepared and the relative amount of protection it provides. Sunscreens are now rated with an SPF number, or sun protection factor, indicating their ability to block harmful ultraviolet light. Theoretically, one could tolerate twice the sun exposure with an SPF 2 sunscreen, four times the exposure with an SPF 4 sunscreen, etc. But remember these are laboratory figures, and like Environmental Protection Agency mileage figures, are only an index that will allow consumers to find a sunscreen to suit their needs. Suffice it to say, there are low (2-4), medium 6-10), and high (15) strengths. Dark skin may only require an SPF of 4 whereas fair skin will require the maximum. However, if the fair-skinned individual insists on suntanning, intermediate strength SPF 8 will allow some tanning.

The base for the sunscreen helps determine another feature — substantivity. This refers to its ability to stay on the skin with sweating, swimming, and other summer activities. Several have proved to be very substantive, providing protection even after a forty-five minute swim in the pool. However, none are substantive enough to preclude repeated application after swimming or excessive sweating. The products that appear to be the most substantive are Super Shade 15®, Sundown 15®, Presun Creamy 15®, and Total Eclipse 15®.

Trial and error are often required to find the most suitable sunscreen for a given patient. Side effects may reflect allergy to the components: para-amino benzoid acid (PABA), benzophenones, PABA esters. There may also be reactions to any one of the preservatives. Patients with known allergies to dyazides, sulfonamides, procaine, and benzocaine should use PABA products with caution because of the high risk of cross reaction. Should a suspected reaction occur, the first step would be to change to an entirely different base and active component, such as switching from a PABA product to a PABA ester. Some of the creamy base products may produce or exacerbate acne and any of the sunscreens may sting when applied due to their alcohol content. We recommend testing any product on a small area of the skin before general use.

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Learning without Work

Spastic Dysphonia Helped by Clipping Recurrent Laryngeal Nerve

Patrick D. Kenan, M.D., and John E. Riski, Ph.D.

Mrs. B. C. lived with a near incapacitating voice disorder, spastic dysphonia, for more than 10 years. This condition resulted in a halting, strained, hoarse form of speech which restricted her considerably from the usual social and business demands of her life and her career, and left her an introverted, depressed, and virtually unemployable individual.

She had seen numerous physicians, otolaryngologists, and speech therapists, all of whom agreed that spastic dysphonia was the problem but that there was no medical or surgical treatment nor effective speech therapy. She had resigned herself to simply enduring her affliction with no real expectation of improvement.

Though the exact etiology of spastic dysphonia is not known and it may in fact have several etiologies, it appears to result in an overly vigorous adduction of the vocal cords on phonation, probably as a result of some unexplained brain stem disorder affecting motor nuclei of the 10th cranial nerves.

Approximately a year ago, Mrs. B. C. saw Dr. Stanley Burns, a Charlotte otolaryngologist, who felt her problem might be helped by a relatively new technique first described by Dr. Herbert Dedo of San Francisco, which was being offered at Duke University Medical Center. Surgical management as described by Dedo is based on a simple principle: by intentionally paralyzing one vocal cord, the other "spastic" cord will compensate, much as usually happens in patients who develop unilateral vocal cord paralysis from spontaneous or iatrogenic causes. The compensation phenomenon results in the mobile vocal cord adducting beyond the midline on phonation to close the glottis and usually results in satisfactory phonation, effective cough reflex, and absence of aspiration on swallowing.

Though visual inspection of the larynx is usually normal in these problems, voice recordings and aerodynamic measurements of Mrs. B. C.'s laryngeal function confirmed that she had spastic dysphonia. Dr. Patrick Kenan of the Duke Otolaryngology service used the standard diagnostic test to determine her suitability for surgical therapy. He infiltrated a local anesthetic into the tracheoesophageal groove to temporarily paralyze the left recurrent laryngeal nerve. He then observed the left vocal cord by indirect mirror examination and found it to be nonmobile in the paramedium position. Her voice, however, was immediately and dramatically improved! Her aerodynamic measurements of laryngeal air flow during phonation also indicated less resistance, better air flow, lower subglottic pressure — all desirable phonatory characteristics.

The local anesthetic wore off in an hour or so and her spastic, strained voice quality returned. Then came the difficult part: the decision to enter the hospital for surgical interruption of the recurrent laryngeal nerve in an effort to provide permanent improvement. It was recommended that Mrs. B. C. ponder the decision at home and that in the meantime she undergo careful neurologic assessment by her neurologist, Dr. Marvin Rozear in Concord. He found no evidence of other neurologic problems or structural CNS lesions and encouraged her to proceed with surgery. In April 1982 surgery was performed at Duke, sectioning the left recurrent laryngeal nerve low in the neck at the level of the thyroid gland.

The results were immediate and precisely as expected. The voice was converted to a smooth, unstrained quality, free of hoarseness. At first she experienced occasional episodes of slight choking (aspiration) if she drank liquids too fast, but this rapidly proved self-correcting. On laryngeal examination, the mobile vocal cord compensated completely for the paralyzed cord by its ability to adduct beyond the midline on phonation and completely close the glottis.

Now, one year later, the patient retains a normal speaking voice without deterioration of her initial improvement. After more than 10 years of her spastic speech disorder, the present voice quality represents a remarkable return to "normal." It is not a voice that can be used for singing, but it is entirely satisfactory for social and business communication.

The Duke Otolaryngology-Speech Pathology services caution, however, that the Dedo procedure is not appropriate for all forms of spastic dysphonia. The diagnostic test in which a local anesthetic is infiltrated around the recurrent laryngeal nerve is safe, takes only a few minutes to perform, and is completely reversible within a brief time. The test is appropriate for all recognized cases of spastic dysphonia. For those who do not show immediate voice improvement or who have significant aspiration, surgery is contraindicated. For those who do improve, surgical sectioning of the nerve may offer hope of restoring a near normal voice.

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Cutaneous Cholesterol Embolism of the Lower Extremities

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Embolization of cholesterol crystals from ulcerated plaques can exhibit a myriad of presentations. Dislodgement of aortic, iliac or femoral plaques is most common and can present as acute hypertension, renal failure, abdominal pain or lower extremity skin lesions.[1]

A 61-year-old white man was admitted to the Durham VA Hospital for evaluation of bilateral leg pain. Four months previously, he had undergone a cardiac catheterization via the femoral artery for evaluation of intractable angina. Following coronary artery bypass surgery, he had experienced no further angina, but had developed claudication of the hips, thighs and calves when walking one mile. He had also developed erectile impotence and a nonpainful "rash" on the dorsal surface of his feet and toes.

His blood pressure was 176/86. A left femoral artery murmur and decreased left popliteal, dorsalis pedis and posterior tibial pulses were noted. Lower extremity pulses on the right were normal. There was a symmetrical, nonpalpable purpuric rash on the dorsa of both feet, but no edema, tenderness, inflammation or evidence of venous insufficiency. Renal function tests and urinalysis were normal.

A small (3.2 cm) distal abdominal aortic aneurysm with an internal clot was seen by abdominal ultrasound. Biopsy of the purpuric skin revealed intravascular cholesterol emboli (figure 1).

The skin lesions resolved spontaneously within one week of hospitalization. Because of the small size of the abdominal aneurysm and the relatively mild claudication symptoms, no surgical intervention was undertaken. The patient was discharged on Persantin and aspirin. Three months later, there was no progression of symptoms and no recurrence of rash.

Multiple cholesterol emboli may be missed by clinicians because of their low frequency and varied presentations Presenting signs and symptoms depend upon the embolization site and can involve the eyes and central nervous system particularly with carotid atheromata, the coronary system with proximal aortic atheromata, the gastrointestinal and renal system with intra-abdominal aortic atheromata, and the lower extremities with infrarenal atheromata. Simultaneous evidence of multisystem disease involving the kidney, gastrointestinal tract, eyes and brain may erroneously suggest the diagnosis of polyarteritis, endocarditis, atrial myxoma or cryoglobulinemia.[2]

In the setting of infrarenal disease, a variety of lower extremity skin lesions may be seen. Although these lesions can be confused with Berger's disease, atherosclerotic or diabetic peripheral vascular disease, cryoglobulinemia, and Raynaud's disease, cholesterol emboli should be suspected if the skin findings are disproportionate to other manifestations of ischemia, and are tender and do not involve pressure points.[1] The commonest cutaneous lesion is livedo reticularis, a purplish mottling of the skin. This most frequently involves the legs and feet, but can also occur on the buttocks and thighs. It often spontaneously resolves.[2] Ulceration with a small scab surrounded by an erythematous purpuric halo, purple toes with or without gangrene, necrosis of the scrotum and foreskin of the penis, lower extremity purpura, and nodules may also be seen.[3, 4] These skin lesions are often painful and may be accompanied by myalgias.

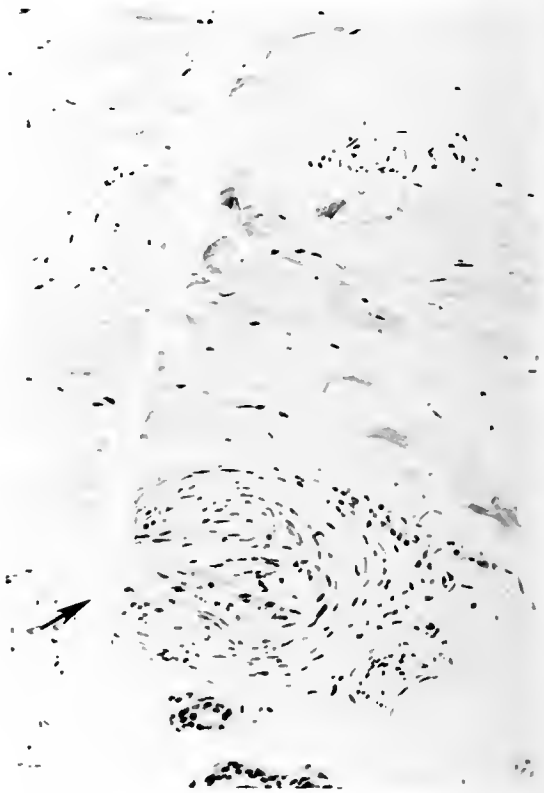

Figure 1. Intravascular clefting of cholesterol crystals.

Eroded atheromatous plaques usually embolize spontaneously, but can also follow physical manipulation such as the femoral catheterization in our patient.[6, 7] There are no controlled studies that show that any therapy helps once embolization has occurred. Anticoagulants have been reported as both efficacious and harmful.[1, 8] Low molecular weight dextran, sympathetic blockers, and intraarterial

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vasodilators are not useful.[9] When dealing with recurrent emboli to major organs, the only proven mode of therapy is to recognize and identify the atheromatous source and surgically remove the nidus.

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Things Most of Us Don't Know

Don't Send a Dime, Send Artichoke Seed

John H. Felts, M.D.

Remember the send-a-dime chain letters, which ordered us to send money to all the addresses that followed? Eventually, because we added our names to the lists, we would be deluged by dimes and thank beneficient providence for such tokens of favor. Later, with inflation, we were implored to send dollars so that we could be rewarded beyond our most irrationalistic expectations and beyond the eyes and arms of the IRS.

Now unless I misread my sources,[1] AEFS Inc. has worked a switch on the chain letter, devising what we might entitle "The Jerusalem Artichoke Jamboree." AEFS Inc. is offering artichoke seed for sale to ambitious farmers who will then sell their crops to other ambitious farmers for seed stock and so on. In this system we will have two-way traffic: money working backward to AEFS Inc. and seeds forward to farmers. Since seeds for a one-acre planting cost about $1,000, it is understandable that AEFS wants 30 million acres in cultivation by 1989.

But what are we to do with the crop when the seed market runs out? AEFS apparently considers the artichoke a valuable future source of ethanol (remember gasohol), fructose, and flour. Now I'm a bit suspicious of artichoke flour. A friend of mine once became preoccupied with the problem of what to do about crooked carrots because the proper American housewife selects only straight carrots for soup and salad even if she only shreds or slices them. So he decided that flour from crooked carrots could be a boon both to farmers and to improvident and underdeveloped nations seeking to feed their multitude. He finally perfected a process to make red carrot flour efficiently and was on his way. But his enthusiasm was short-lived. While many nations in the Third World were interested, they all wanted the United States government to pay the bill. My friend abandoned his dream of combining benevolence and profit through science.

The Jerusalem artichoke doesn't look as promising as carrots, which at least have a reputation for preventing night blindness and for offering some bulk and few calories to the diet. It isn't that people haven't tried to do something with the artichoke. Ever since the Spaniards brought it, along with nasturtiums, marigolds, zinnias, and corn, from the New to the Old World, it has had its advocates. The late Euell Gibbons[2] struggled and came up with seven suggestions for its use: raw in a salad, pickled after boiling (probably its most popular place in the South), as a garnish for roasts, fried (almost anything can be fried), mashed with butter like potatoes, in a casserole, and finally in an artichoke chiffon pie. Gibbons generously provides a recipe for the pie in an effort to entice the venturesome.

If we are going to do these things to a vegetable, we really need to know what it is. The Jerusalem artichoke is a tuber, Helianthus tuberosus, not an artichoke. Actually it is a sunflower and Jerusalem comes, not from holiness, but from the corruption of girasol, the Spanish and Italian word for sunflower. The Italians call it topinambur which sounds more like a character from the Arabian Nights than a tuber. Perényi[3] offers an eighth use, pureed for soup, but adds that the tuber is low in glucose and "that is what ails it." She says it has no character, is a nuisance and isn't a substitute for anything. Obviously AEFS would prefer Gibbons to Perényi.

Why write about artichoke culture in a medical journal? There is a reason. Jerusalem artichokes are an important source of inulin, the polysaccharide used in determining glomerular filtration rate. Most of the supply probably comes from the 1,000 acres in annual cultivation before 1981. But inulin clearance is not all that cost-effective or efficient, particularly when creatinine is easier to measure and doesn't have to be infused, and when radionuclides

From the Department of Medicine, Bowman Gray School of Medicine, Winston-Salem, NC 27103.

offer advantages, too. What then are we going to do with the bumper crops? We will have bumper crops because the Jerusalem artichoke is almost as tenacious as kudzu and honeysuckle.

[It is a favorite hors d'oeuvre in the Stead family — ed.]

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Habit Patterns Increase Efficiency and Save Energy

Eugene A. Stead, Jr., M.D.

I have always taught that the doctor in training should develop reaction patterns that allow him to care for diseases with the minimum of intellectual effort. Practice does make perfect and once patterns are fixed in the brain they can be executed with a minimum of effort. You will notice that I have specified the care of *disease*. The care of *illness* — the patient's response to the disease — is much more complex and the variations in people are more numerous than the variations in disease. The experienced doctor will use patterns to care for the disease; he will need to expend intellectual effort to care for the patient. The experienced doctor will appreciate when execution by the habit pattern is not producing expected results. He will move the disease from the usual problem to the exceptional. He must now completely re-evaluate the problem and spend more time and energy, or he must refer the patient to one whose practice allows him to have this extra time.

Until today I had never known a surgeon to discuss the role of habit formation and its usefulness in practice. Dr. Frank Spencer, chairman of the Department of Surgery at New York University Medical Center, addressed this problem as follows: "An important fact is that most decisions are automatic, based on 'pattern recognition.' Driving an automobile, making decisions automatically, with little conscious thought, is a familiar example. When operations are performed in a routine way, again and again, such automatic decisions are simply made. This indicates the importance, when feasible, of performing an operation the same way each time, ideally with few changes in the operating team. Making . . . small changes in the operative technique, perhaps for novelty or curiosity, may seem trivial but can unwittingly seriously impair this capacity for automatic decision-making, evolving from pattern recognition."[1]

It's hard to stay ahead of those surgeons.

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Blood Letting and Early Blood Transfusion in the Carolinas

William J. Kuhns, M.D.

Blood Letting

PRIOR to Harvey's discovery of the blood's circulation, doctors thought the blood varied in composition in different parts of the body so that while disease might contaminate one part, the rest of the body's blood could remain healthy. Harvey's discovery had little substantive effect on the prevailing therapeutic practices of bloodletting. Given the new knowledge, doctors merely opened a convenient vein regardless of the disease or its origins. Indications for bleeding became legion of which the most common were infections and inflammatory disorders.[1, 2] As there were a variety of reasons for bleeding, so there were a number of ways to bleed. General bleeding or venesection was probably the most extensive. It involved the use of a tourniquet device and a lancet to make the incision into the vein. The blood which flowed out was usually caught in a pan or basin. The extent of the bleeding depended on the physician's preference, and patients were often bled to the point of syncope. Bleeding was stopped by manual pressure using the finger or a puff ball or wax plug. Infection and uncontrollable arterial bleeding were not uncommon complications.

Local bleeding was often employed for disorders restricted to one region of the body. The most common techniques used were cupping, scarification, and leeching. Leeches were considered particularly useful for taking blood from places less accessible to cupping or for treating children.[3]

American medicine early on was very dependent upon European developments, and practices in Europe were imitated and sometimes expanded upon by stateside physicians, many of whom had received training in the medical centers of Edinburgh, London, Paris, and Vienna. Bloodletting, considered a standard practice in Europe, was brought to the colonies and remained a medical staple long after independence from England was won in 1783. In point of fact, after 1793, under the influence of Benjamin Rush ("Prince of Bleeders"), the letting of blood became the foundation of American therapeutics.[3] And so it remained throughout most of 1800s, particularly in the rural areas. The demand for leeches for local bleeding was particularly great, and was aggravated by a dearth of local suppliers. Unfortunately, the medicinal leech was not native to this country and had to be shipped from abroad.[3]

As to the extent of bleeding practices, one pioneer doctor confessed that he could load the steamboat, *Andrew Jackson*, with all the calomel he had prescribed, and float it on the blood he had drawn from his backwoods patients.[4] However, there were early skeptics to this unrestricted practice.[2, 3, 5] As far back as 1798, Dr. Hugh Williamson (figure 1), a respected North Carolina physician, writer,

Figure 1. *Dr. Hugh Williamson. North Carolina Revolutionary War officer, physician, and writer, who expressed doubts concerning unrestricted blood-letting at a time when this procedure was considered highly fashionable. From copy in North Carolina Collection, UNC Library, Chapel Hill.*

From the Division of Laboratory Medicine, Department of Pathology, University of North Carolina, Chapel Hill, NC 27514.

statesman and former Revolutionary War officer, had staunchly refused to admit the importance or safety of bleeding in all cases, claiming that the lancet was not of value in treating fevers in the "low country in Carolina."[6] Even more emphatic was a later doctor's statement that bloodletting in certain cases is "simply murderous." By the mid 1800s a more cautious tone was adopted by many, typified by a brief paragraph published in the *Transactions of the Medical Society of North Carolina*, May 1851 — "Dr. Satchwell stated that the profession in his county was divided upon the subject of blood letting, and was generally governed by circumstances." In 1860 Dr. James Dickson, a two-time president of the North Carolina State Medical Society, reminded his colleagues that bleeding had been an "indispensable remedy" for treating scarlet fever epidemics for more than twenty-five years. He therefore reserved the right to use it as treatment whenever he felt it necessary.

Still, the influx from Europe of statistical and clinical studies, together with new knowledge of blood physiology and chemistry, ultimately led to restrictions in blood letting to all but a few disorders by the 19th century's end. For example, P. C. A. Louis, in his article *Effects of Bloodletting* gave numerical proof that bleeding was useless, if not downright harmful in most inflammatory diseases.[7] A review of Louis' essay in an 1836 issue of the *American Journal of Medical Sciences* cited it as "one of the most important medical works of the present century."

As might be expected, a corps of traditionalists expressed themselves from time to time in no uncertain terms. An 1859 article in the *North Carolina Medical Journal* contains the following vehement statement: "I shall pronounce any man who professes to have found a substitute for venesection in inflammatory affections, a libeler on the character of medical science — an impudent pretender." Much later, in 1889, appeared an article entitled, "Remarks on Blood Letting" by a North Carolina physician who was perturbed by comments of a younger colleague whose medical school professor had taught him that the lancet was a very dangerous instrument. The writer comments, "I am a great admirer of professors in general; still I never could believe that one brain contained the whole of medical knowledge without even a minimum of error." He then says: "I might go on citing case after case in which I have seen good results follow blood letting . . . I advise my medical brethren who have not done so to 'try the lancet.'"

Lancets, scarifiers, cupping and leeching devices apparently remained in some demand as judged by their continued presence in advertisements even into the 1900s in catalogs of manufacturers or merchandisers of medical and surgical paraphernalia.

Interestingly the obsolescence of therapeutic blood letting was matched by scientific events that foreshadowed today's well-known mode of blood letting as a procedure in normal adults, namely blood donorship. These important developments included Landsteimer's discovery of the blood groups, the adoption of compatibility testing and of blood transfusions by indirect means and, more recently, apheresis technology. Apheresis is now also recognized as a technique for the selective removal of unwanted blood components in certain diseases.

Blood Transfusion

The transfusion of blood could hardly be imagined until Harvey's description of the circulation in 1628. Shortly thereafter Malpighi's discovery, by microscopy, of the capillaries which linked veins and arteries, provided the final evidence for Harvey's theory. These findings hardly affected prevailing medical practices; they also disputed older doctrines and thus were badly in need of supporters, especially groups wielding great influence in scientific circles. One effective group proved to be the Royal Society of London. Under its auspices, transfusions of animal blood to animals and to man were performed as early as the 1660s. It was not until more than a century later that human blood transfusions were carried out.[8]

The first transfusions were direct, using venous cannulas or catheters, but were followed by indirect methods using syringes or other impelling devices, as well as funnels. As noted above, European medical practices found their way rapidly to the United States. Some drawings of transfusion devices appeared in Lorenz Heister's surgical text (1718 and later) which was distributed widely and could be found in private medical libraries in North Carolina[9] and elsewhere in the South. Such communications could have had a bearing on what is believed to be the first American transfusion, in 1795, by Philip Syng Physik, a surgeon and a graduate of Edinburgh.[3] By 1795, the hazards of acute blood loss could be understood in terms of Lavoisier's and Priestley's findings a generation earlier, making blood transfusion a rational mode of treatment. Prior indications for blood transfusion were usually cited as melancholia or insanity or long standing disease.[3]

The practice of human blood transfusion was greatly stimulated by James Blundell, an English obstetrician who correctly advocated transfusion for life-threatening hemorrhage in post partum women. A cautious and deliberate man, he carried out lengthy experiments in animals prior to his studies on humans. His experiments demonstrated among other things the dangers of interspecies transfusions such as sheep to dog. He was a good writer, and his methods were published in his widely circulated textbook, as well as in medical journals of the day.[10]

It was a common practice of editors of American journals to publish abstracts or comments on papers in European journals. *The New York Medical Repository* and the Philadelphia based *American Journal of Medical Sciences* were typical in this respect. The findings of Blundell, for example, were reported in both journals as well as in the *Boston Medical and Surgical Journal*, later the *New England Journal of Medicine*. It would be difficult to say how much of this came to the attention of North Carolina physicians. Fifteen of them were among the subscribers to *Medical Repository* in 1800 and Dr. Williamson, noted above, had published his article in this journal two years previously. As most North Carolina medical graduates had obtained their degree in Philadelphia, it is likely that many of them subscribed to the *American Journal of Medical Sciences*. Abstracts of Blundell's work and others appeared in successive volumes of the *American Journal of Medical Sciences* in 1828, 1829, and 1830, then in 1836 and 1839, and fives times thereafter from 1853 to 1896. However, American opinion on this new practice was quite conservative.

Commenting on Blundell's work, an editor wrote, "we do not hesitate to believe these accounts, but we very much doubt that the patient would have died had the remedy been withheld."

Abstracts or articles on transfusions appeared in the *North Carolina Medical Journal* in 1866 and 1883. The highly esteemed textbook, *Cyclopedia of Practical Medicine*, in its Philadelphia revision in 1845 also contained a generous section on blood transfusion. This text was available from booksellers in Richmond, Charleston, New Orleans, and doubtless Charlotte or Raleigh, and was a staple in many medical libraries.[11]

It was to be expected that with this available information, transfusion would be attempted by American physicians. As noted by Schmidt, most of the use of the new therapy in the United States was in the South.[11] The few early attempts at transfusion in Philadelphia could have served as catalysts to Southern doctors, since many of them had been educated there. Blood transfusions in New Orleans in the 1850s have been termed an American first,[12] but more recent findings have established Jacob Prioleau of Charleston (figure 2) as the first American to transfuse blood outside of Philadelphia.[11] A handwritten note in the minutes of the meeting of the Medical Society of South Carolina for March 1, 1859 states that "Dr. Prioleau had partially performed the operation of transfusion in a case of flooding — the instruments employed were not suited and therefore rendered the success doubtful." Prioleau was professor of obstetrics at the Medical College of South Carolina and was doubtless familiar with Blundell's experiments. It is noteworthy that a medical student, Mr. E. J. Hooper, who attended this school during Prioleau's tenure, wrote his medical thesis in 1842 on the subject of blood transfusion.

Transfusions during the Civil War were scant considering the appalling number of casualties due to hemorrhage. There are several records of transfusions by Union surgeons,[13] but none documented by Confederate physicians. Samuel Choppin, a New Orleans surgeon, is said to have participated in transfusions at Charity Hospital in the 1850s. He later became Beauregard's surgeon general. However, it is not known whether he attempted this new mode of therapy during the war.

Some real advances in blood transfusion were made in the post Civil War era. From 1869 to 1878, Dr. Thomas G. Morton of Philadelphia undertook clinical trials and animal experiments that were well conceived and thoroughly documented and provided further insight into the practical problems of coagulation and embolization during

Figure 2. *Dr. Jacob Prioleau – first Southern physician to perform human blood transfusion in a case of severe hemorrhage. The procedure was unsuccessful according to a note which appeared in* Transactions of the Medical Society of South Carolina, *March 1852. Reproduced with the permission of the Waring Historical Library, Medical University of South Carolina, Charleston, SC.*

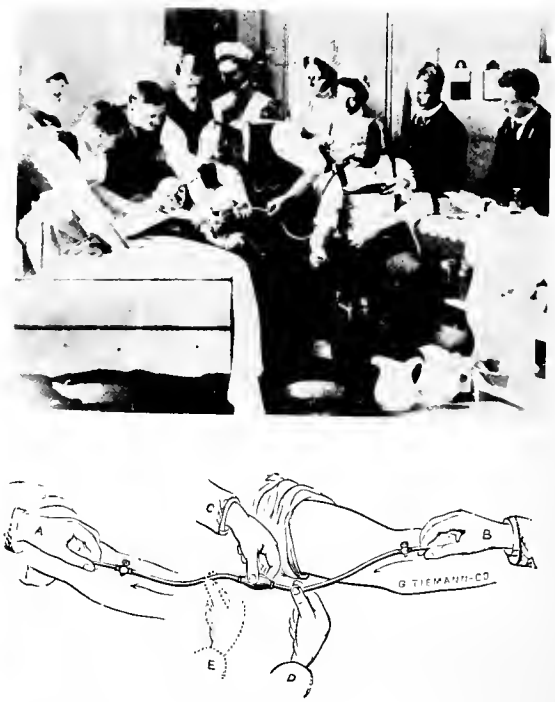

Figure 3. *(Top) Direct blood transfusion using Aveling's apparatus at Bellevue Hospital, New York in the late 1800s, being observed intently by a corps of attendings and nurses. At right a house officer holds an emesis basin for the donor who appears transfixed by the proceedings. (Bottom) Aveling's apparatus, which was little more than a line from donor to patient, with a bulb in the center permitting the physician to alternately aspirate and propel blood. The bulb also provided the transfusionist with a means of estimating the volume of blood transfused. Direct lines in the past afforded no such opportunity. Reproduced with the permission of the Waring Historical Library, Medical University of South Carolina, Charleston, SC (bottom photo).*

transfusion.[14] During this time a number of other human blood transfusions were reported in New York, Pittsburgh and elsewhere.[15] Although indirect transfusion by syringe was practiced, the problems encountered were sufficiently great to oftentimes dictate the use of direct infusions. In the 1870s a direct transfusion device was perfected by Aveling, an Englishman, which became quite popular (figure 3) and could be found advertised in medical instrument catalogs for many years alongside pictures of leeching devices and scarifiers.[16, 17] There is no evidence that North Carolina physicians transfused human blood during this era. Perhaps this is understandable since North Carolina practices were very busy and primarily rural in nature, and offered physicians little opportunity for exchange of information or experimentation.

However, two post-war transfusions of lamb's blood by North Carolina physicians are on record, one in 1872 and one in 1890; both were stated to be a "last resort" in desperately ill patients.[18, 19] Consultant in the first transfusion was Dr. J. Francis King, an 1853 graduate of New York Medical College, a Confederate Army surgeon, and a medical society official. The patient in question was terminally ill with gangrene and apparent anemia following leg amputation. Eight ounces of blood were transfused by syringe after direct transfusion had been attempted with little success. Temporary improvement in pulse and general wellbeing were noted, but the patient died fifteen days thereafter following severe gastritis. No adverse effects to the transfusions were recorded.

Animal blood had been given to humans as early as 1667, and the practice was continued into the 1900s despite mounting evidence of untoward effects including hemolysis and serum sickness. It is possible that despite these drawbacks, dire situations complicated by life threatening hemorrhage prompted early physicians who were aware of the potential therapeutic effects of volume restoration and oxygen carrying capacity to waive the species barrier, if they thought of it at all, in favor of the most rapidly available and submissive source of donor blood. Blood transfusions as we now know them did not become standard practice until the discovery of blood groups and suitable methods of anticoagulation and preservation.

Acknowledgment

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About Books

Paperback Books for Summer Reading

Matthew N. Hodgson

This page — a new feature of the *Journal* — will be about books and authors with emphasis upon the pleasure that they may afford (at least, in this reviewer's opinion) both casual and inveterate readers. New and timely books will be considered, as will some volumes already in print, since much good reading fare escapes the best-seller lists. Still other books and their authors will be noticed here even though they were published a generation and more ago; but the emphasis always will be upon pleasurable reading.

Since summer is upon us and vacation plans are being made, it seems appropriate to list a number of books available in inexpensive paperbound editions that can be easily transported and read with pleasure in almost any environment, whether metropolitan or bucolic. Most of the books chosen are fiction and a majority of these are thrillers. If you have already read some of them, consider others written by the same authors.

Scoop by Evelyn Waugh (Little, Brown). One of the funniest books of the last half-century. Admirers of the author's *Brideshead Revisited* (which Waugh considered to be his masterpiece, but many of his friends and critics did not) may be at first disconcerted by this uproarious satire on English and American journalism during the 1930's; but they will soon understand why the late Edmund Wilson described Waugh as "the only comic genius to appear since Bernard Shaw."

John Le Carre's novels of espionage have deservedly been best-sellers with the result that Bantam Books has reissued in paperback the author's first book, *A Murder of Quality*, which is at once a superior who-dunit and a wry examination of class distinctions at an English public school.

Robert B. Parker, who teaches English at the University of Connecticut, chose as his doctoral thesis the study of the detective novels of Dashiel Hammett and Raymond Chandler. He has recreated both in the fictional person of "Spenser," the protagonist of most of his ten thrillers. Like his masters, Parker has a good feel for atmosphere and character. All of his books are diverting, but you might start with *The Judas Goat* and *A Savage Place*, both published by Dell.

Andrew Garve's first mystery *Fontego's Folly* was published in 1950; his thirtieth novel *Counterstroke*, in 1981. Each of his books has a different and original plot and all are written in an easy, straightforward manner. *No Tears for Hilda, The Ashes of Loda*, and *Murder Through the Looking Glass* are available in paperback editions from Harper & Row; however, you will have to look for his other books at your local public library. Any Garve novel can be read in two and a half hours flat, providing a pleasant evening's recreation.

Dr. Lewis Thomas is the director of the Sloan Kettering Institute of New York City. A distinguished physician and medical researcher, he is also one of America's finest prose stylists. His latest book, *The Youngest Science* (available from Harper & Row in both cloth and paperback editions) argues, among other things, that while medicine has progressed as a science, somewhere along the way the *art* of healing has been neglected. In part autobiographical, in part philosophical, Dr. Thomas's new book deserves the wide readership that it doubtless will receive. Many years ago, when I first entered book publishing in New York, a famous editor remarked to me that when scientists wrote really well, their prose was much better than that of any professional writers. *The Youngest Science* proves his point. It is informative, thoughtful, and edifying, and it is always interesting.

Another very different kind of memoir is William Manchester's *Good-Bye Darkness*. The author, who won a Pulitzer Prize for his *An American Caesar*, a life of Douglas MacArthur, served with the Marines in the Pacific in World War II. Ostensibly, his book is about the sites and remnants of major land battles between the armed forces of America and Japan from Pearl Harbor until the Japanese surrender in Tokyo Bay. Obviously, Manchester did not take part in every engagement during this terrible conflict, but he has almost total recall of his own experiences as a young foot-soldier fighting in some of the most difficult terrain imaginable. Hundreds — perhaps thousands — of books have been written about the Pacific War, but none I think is quite so evocative and powerful as Manchester's volume — or at least parts of it. Like Erich Maria Remarque's *All Quiet on the Western Front*, it is less about the mass movements of armies than about the plight of an ordinary young man caught up in a malestrom of confusion, menace, and death. A fine, honest, and engrossing book, destined to become a minor classic.

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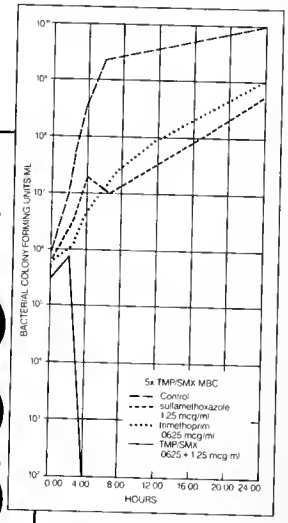
BACTRIM	**96%** 328,598	**89%** 63,551	**93%** 62,691	**84%** 4174	**91%** 4381	**88%** 1736	**96%** 7326	**92%** 11,856
ampicillin	72% 345,209	5% 65,466	85% 67,338	16% 4381	70% 4402	10% 1775	9% 7759	11% 12,091
cephalexin†	81% 343,339	85% 67,031	92% 67,027	16% 4398	80% 4365	22% 1834	13% 7571	12% 11,846
nitrofurantoin	97% 307,785	65% 61,162	7% 59,775	13% 3848	14% 3059	67% 1707	60% 7109	67% 10,830

†Analogous to cephalothin, the primary antibiotic disc used in testing
Source: The Bacteriologic Report, BAC-DATA Medical Information Systems, Inc., Winter Series, 1981-82.
Numbers under percentages refer to the projected number of isolates tested.

RAPID *IN VITRO* DESTRUCTION OF *E. COLI**



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IN STATE

June 16

"Malpractice Awareness — Stat"
Place: Kill Devil Hills
Info: Wayne Parker, Medical Mutual Insurance Company, Box 27444, Raleigh, NC 27611. 919/828-9334

June 16-17

"Duke/Watts Family Medicine Symposium"
Info: Samuel Warburton, M.D., 407 Crutchfield Street, Durham, NC 27704. 919/471-2571

June 22

"Asthma and IPPB, Spirometry"
Place: Sanford
Credit: 3.5 hours AMA
Info: Robert S. Cline, M.D., Central Carolina Hospital, Sanford, NC 27330. 919/774-4100, ext. 394

June 28

"Records and Other Necessities"
Place: Hickory
Info: Wayne Parker, Medical Mutual Insurance Company, Box 27444, Raleigh, NC 27611. 919/828-9334

June 29

"Records and Other Necessities"
Place: Boone
Info: Wayne Parker, Medical Mutual Insurance Company, Box 27444, Raleigh, NC 27611. 919/828-9334

July 1-3

"Sports Medicine Symposium"
Place: Wrightsville Beach
Credit: 6 hours AAFP
Info: Judy Barnhill, North Carolina Medical Society, Box 27167, Raleigh 27611. 919/833-3836

July 1-29

"Medical Mycology"
Place: Durham
Credit: 70 hours
Info: T. G. Mitchell, M.D., Box 3803, Duke University Medical Center, Durham, NC 27710. 919/684-5792

July 7-9

"Topics in Internal Medicine"
Place: Asheville
Fee: $125
Credit: 12 hours, Category I AMA
Info: Emery C. Miller, M.D., Bowman Gray School of Medicine, Winston-Salem, NC 27103. 919/748-4450

July 11-15

"25th Annual Postgraduate Course — Morehead Symposium"
Place: Atlantic Beach
Credit: 25 hours
Info: Cindi Easterling, Box 3306, Duke University Medical Center, Durham, NC 27710. 919/684-6485

July 15-17

"Comprehensive Care of the Patient with Tuberculosis in the 1980's"
Place: Black Mountain
Info: Scott Venable, American Lung Association, P.O. Box 27985, Raleigh, NC 27611. 919/832-8326

July 20

"Poisoning and Suicides"
Place: Sanford
Credit: 2 hours, Category 1 AMA
Info: Robert S. Cline, M.D., Central Carolina Hospital, Sanford, NC 27330. 919/774-4100, ext. 394

July 25-29

"Diagnostic Imaging Postgraduate Course"
Place: Atlantic Beach
Fee: $375 ($200 for those in training)
Credit: 25 hours
Info: Donald R. Kirks, M.D., Box 3834, Duke University Medical Center, Durham, NC 27710. 919/684-2711

August 4

"Records and Other Necessities"
Place: North Wilkesboro
Info: Wayne Parker, Medical Mutual Insurance Company, Box 27444, Raleigh, NC 27611. 919/828-9334

August 4-7

"1983 North Carolina Summer Wellness Festival"
Place: Chapel Hill
Fee: $125
Info: Paula Schubert, School of Public Health, UNC, Chapel Hill, NC 27514. 919/966-4032

August 17

"Cardiovascular Disease: Risk Reduction Strategies"
Place: Sanford
Credit: 2 hours
Info: Robert S. Cline, M.D., Central Carolina Hospital, Sanford, NC 27330. 919/774-4100, ext. 394

August 18-19

"Approaches to the Treatment- Resistant Psychiatric Patient: An Analysis of Failures and Successes"
Place: Asheville
Fee: $50-90
Credit: 12 hours Category 1
Info: Forrest Smith, Box 3253, Duke University Medical Center, Durham, NC 27710. 919/684-5050

August 23

"Records and Other Necessities"
Place: Asheville
Info: Wayne Parker, Medical Mutual Insurance Company, Box 27444, Raleigh, NC 27611. 919/828-9334

August 27

"Geriatric Education Day"
Place: Raleigh
Credit: 6 hours AAFP
Info: NC Academy of Family Physicians, Box 20146, Raleigh, NC 27612. 919/781-6467

September 1

"Malpractice Awareness — Stat"
Place: Raleigh
Info: Wayne Parker, Medical Mutual Insurance Company, Box 27444, Raleigh, NC 27611. 919/828-9334

September 13

"Critical Care Medicine: Initial Triage and Management"
Place: Fayetteville
Credit: 5.5 hours AAFP
Info: Mrs. Mary Henley, Fayetteville Area Health Education Foundation, Inc., Box 64699, Fayetteville, NC 28306. 919/323-1152

September 15-16

"Fifth Annual Health Law Forum: Antitrust Impact on Medical Staffs"
Place: Greenville
Info: Bonnie Partin. 919/872-2830; in NC call 800/662-7403

September 21

"Surgical Infections"
Place: Durham
Info: Cindi Easterling, Box 3306, Duke University Medical Center, Durham, NC 27710. 919/684-6485

September 21

"Wellness Care for the 80's"
Place: Sanford
Fee: $15
Credit: 4.5 hours Category 1 AMA
Info: Robert S. Cline, M.D., Central Carolina Hospital, Sanford, NC 27330. 919/774-4100, ext. 394

September 29-October 2

"Diseases of the Upper Urinary Tract"
Place: Pinehurst
Credit: 16 hours Category I
Info: Linda Mace, Box 3707, Duke University Medical Center, Durham, NC 27710. 919/684-2033

September 30-October 1

"Changing Concepts in Reproductive Endocrinology and Infertility"
Place: Chapel Hill
Info: W. B. Wood, M.D., 231 MacNider 202H, UNC School of Medicine, Chapel Hill, NC 27514. 919/962-2112

October 1-2

"Practical Dermatology for the Non-Dermatologist"
Place: Asheville
Info: W. B. Wood, M.D., 231 MacNider 202H, UNC School of Medicine, Chapel Hill, NC 27514. 919/962-2112

October 3

"Perinatal Medicine Symposium"
Place: Durham
Credit: 7 hours Category I
Info: Cindi Easterling, Box 3306, Duke University Medical Center, Durham, NC 27710. 919/684-6485

October 3-7

"Microsurgery Workshop"
Place: Durham
Info: Donald Serafin, M.D., Box 3372, Duke University Medical Center, Durham, NC 27710. 919/684-3347

October 5

"Initial Treatment in Hypertension — New Concepts"
Place: Durham
Info: J. C. Gunnells, M.D., Box 2991, Duke University Medical Center, Durham, NC 27710 919/684-5038

October 7-9

"Second UNC Symposium on Sarcoidosis"
Place: Chapel Hill
Info: W. B. Wood, M.D., 231 MacNider 202H, UNC School of Medicine, Chapel Hill, NC 27514. 919/962-2112

October 14-15

"Davison Club Weekend"
Place: Durham
Info: Janet Sanfilippo, Box 3407, Duke University Medical Center, Durham, NC 27710. 919/684-6347

October 18

"Malpractice Awareness — Stat"
Place: Asheville
Info: Wayne Parker, Medical Mutual Insurance Company, Box 27444, Raleigh, NC 27611. 919/828-9334

October 19

"Cerebrovascular Accidents, Acute Care and Rehabilitation"
Place: Sanford
Credit: 2 hours Category I AMA
Info: Robert S. Cline, M.D., Central Carolina Hospital, Sanford, NC 27330. 919/774-4100, ext. 394

November 1

"Malpractice Awareness — Stat"
Place: Charlotte
Info: Wayne Parker, Medical Mutual Insurance Company, Box 27444, Raleigh, NC 27611. 919/828-9334

November 10-12

"Medical Alumni Weekend"
Place: Durham
Info: Janet Sanfilippo, Box 3407, Duke University Medical Center, Durham, NC 27710. 919/684-6347

November 16

"Antibiotics and Infectious Disease"
Place: Sanford
Credit: 3.5 hours Category 1
Info: Robert S. Cline, M.D., Central Carolina Hospital, Sanford, NC 27330. 919/774-4100, ext. 394

November 30-December 3

"35th Annual Scientific Assembly"
Place: Greensboro
Credit: 16 hours AAFP
Info: NC Academy of Family Physicians, Box 20146, Raleigh, NC 27619. 919/781-6467

December 6

"Duke Tuesday"
Place: Durham
Info: Linda Mace, Box 3707, Duke University Medical Center, Durham, NC 27710. 919/684-2033

December 21

"Obstetrical Analgesia"
Place: Sanford
Credit: 2 hours Category I
Info: Robert S. Cline, M.D., Central Carolina Hospital, Sanford, NC 27330. 919/774-4100, ext. 394

Out of State

June 10-12

"Practical Dermatology for the Non-Dermatologist"
Place: Williamsburg, VA
Info: W. B. Wood, M.D., 231 MacNider 202H, UNC School of Medicine, Chapel Hill, NC 27514. 919/962-2118

June 16-18

"Update in Pulmonary Infections"
Place: Hilton Head, SC
Fee: $300 (ACCP members); $325 (nonmembers)
Credit: 15 hours Category I AMA
Info: Dale E. Braddy, American College of Chest Physicians, 911 Busse Highway, Park Ridge, IL 60068. 312/698-2200

June 16-19

"Dermatology for the Non-Dermatologist"
Place: Myrtle Beach, SC
Fee: $325 ($175 residents and interns)
Credit: 15 hours AMA
Info: Angelika Langen, Box 3135, Duke University Medical Center, Durham, NC 27710. 919/684-5337

July 4-9

"Midsummer Family Practice Digest"
Place: Myrtle Beach, SC
Credit: 30 hours AAFP
Info: NC Academy of Family Physicians, Box 20146, Raleigh, NC 27619. 919/781-6467

July 19-23

"Sixth Annual Symposium on Contemporary Clinical Neurology"
Place: Hilton Head Island, SC
Info: Joan Sullivan, Department of Neurology, Vanderbilt University School of Medicine, Nashville, TN 37212

July 28-30

"Fifth Annual Pediatric Primary Care Conference — Pediatrics at the Beach"
Place: Virginia Beach, VA
Fee: $250
Credit: 12.75 hours Category 1, PREP, and AAFP
Info: Sheri Rosner, Box 48, MCV Station, Richmond, VA 23298. 804/786-0494

July 31-August 4
"Duke University Trauma Conference"
Place: Myrtle Beach, SC
Fee: $250
Credit: 21 hours, AMA, ACEP
Info: Rita Weber, R.N., Box 3869, Duke University Medical Center, Durham, NC 27710. 919/684-2237

August 1-5
"Eleventh Annual Beach Workshop"
Place: Myrtle Beach, SC
Fee: $200
Credit: 20 hours Category 1 AMA
Info: Emery C. Miller, M.D., Bowman Gray School of Medicine, Winston-Salem, NC 27103. 919/748-4450

August 26-28
"Medical Malpractice Seminar"
Place: Hot Springs, VA
Fee: $220 (SMA members), $275 (nonmembers)
Info: Jeanette Stone, Southern Medical Association, Box 2446, Birmingham, AL 35201. 205/323-4400

September 27-29
"Consensus Development Conference on the Treatment of Hypertriglyceridemia"
Place: Bethesda, MD
Info: Peter Murphy, Prospect Associates, 2115 East Jefferson Street, Suite 401, Rockville, MD 20852. 301/468-6555

October 13-14
"Medical Malpractice Seminar"
Place: Arlington, VA
Fee: $220 (SMA members), $275 (nonmembers)
Info: Jeanette Stone, Southern Medical Association, Box 2446, Birmingham, AL 35201. 205/323-4400

October 15-22
"Diving Accident and Hyperbaric Oxygen Treatment"
Place: Grand Caymen Island, West Indies
Info: Cindi Easterling, Box 3306, Duke University Medical Center, Durham, NC 27710. 919/684-6485

November 6-9
"77th Annual Scientific Assembly"
Place: Baltimore, MD
Info: Jeanette Stone, Southern Medical Association, Box 2446, Birmingham, AL 35201. 205/323-4400

The items listed in this column cover the six months immediately following publication. Requests for listing should be mailed to Patricia Hodgson, Managing Editor, *North Carolina Medical Journal*, P.O. Box 3910, Duke University Medical Center, Durham, NC 27710.

North Carolina Medical Society Auxiliary

Inaugural Address

Because I have had good role models throughout the state and because people look to us for our talents and expertise, I am very proud to be your new president.

One of my favorite definitions of a leader is when you turn around and see someone is following you! This is the 60th year for the North Carolina Medical Auxiliary and look how far we have come since Sadie McCain started it all and 58 presidents later. We have changed so much as each new president and her board have brought fresh, innovative ideas.

My theme for 1983-84 is CHANGING IMAGERY. It is an articulation of the condition of the auxiliary that is changing faster than some of us can appreciate.

The auxiliary can be something for all physicians' spouses. The spectrum includes the camaraderies we share in the unique position as a physician's spouse; the support and friendship we can give each other. A support group has the responsibility in not what it gives — but in what it doesn't take away! I hope we will become better acquainted with each other and renew friendships.

My concerns for the year are in the areas that are a growing deterrent to our quality of life. Everyone is affected by the social and economic change in the world. through our volunteer abilities we have a choice of actively participating in the governance of medicine or letting someone else make the decisions for us. With federal aid cuts we have seen and the further cutbacks around the corner — what is your choice? Please become involved. Be aware of the politics in medicine. How physicians are able to practice is controlled by legislators in Raleigh and Washington. And we can greatly influence our legislators.

This year we will see programs to help curtail substance abuse, whether alcohol or other drugs. Statistics have proven that it takes an adult 15-20 years to become an alcoholic and teenagers 1-1½ years to accomplish the same state of anesthesia, which can result in their death. You know, when someone we love dies — we lose a friend. When we die, we lose all our friends! It is a great loss either way.

Adolescent pregnancy has changed by all statistics in the last 10 years. Seventy-two per cent of teen mothers are on welfare for 1-5 years. One million teens in the United States became pregnant in 1977. The figure has increased yearly. And with an uneducated child caring for a child, we see child abuse. We have a very unusual program dealing with this subject.

We will continue to promote a positive image of the physician but we also will work on our own positive side! We are going to let the computer "do the walking and the talking." The Fall Workshop, in Charlotte this year, will have you learning everything a computer will manage for you. There will also be a program on "Marketing Your Volunteer Skills." Both of these topics address our changing imagery or lifestyles. I hope you will be newly enthused by innovative programs, which you have asked for, and our membership will grow. That is the greatest compliment to any president — but you are the main benefactor.

One more thing. I want to honor someone here today that I consider our best auxilian of the year! The most dedicated and inspiring volunteer I have had the privilege to work with. Will you please turn and hug that person sitting next to you? — See? Some of you have already made a new friend.

Thank you for being here and I SALUTE you.

Marguerite Tracy

North Carolina Names in the News

Dr. John T. Sessions, Jr., Professor of Medicine at the University of North Carolina in Chapel Hill, was elected Vice President of the American College of Physicians at

their meeting April 14, 1983. Dr. Sessions, a gastroenterologist, will serve a one-year term beginning immediately.

At ceremonies on April 22 at Duke University Eye Center, the building that houses the Eye Center was formally named the **Joseph A. C. Wadsworth** Building in honor of Dr. Wadsworth, the first Chairman of the Duke Department of Ophthalmology. The ceremony was preceded by a two-day symposium on ophthalmology at the Searle Center.

The North Carolina Obstetrical & Gynecological Society held its fifty-first annual meeting in Southern Pines April 28-May 1, 1983. Its President, **William A. Nebel, M.D.**, of Chapel Hill, reported that there were both original contributions and panel discussions, as well as a featured speech by **Dr. Nathan Kase**, Chairman of the Department of Obstetrics & Gynecology at Mount Sinai School of Medicine in New York City. Dr. Kase spoke on the endocrinology of breast cancer. New officers for 1983-1984 include **Frank C. Greiss, Jr., M.D.** from Bowman-Gray School of Medicine, President and **Robert G. Deyton, Jr., M.D.** of Greenville, Secretary-Treasurer. The North Carolina Society also produced the following resolution on nurse-midwifery in the state:

The North Carolina Obstetrical & Gynecological Society, recognizing changing trends in medical care, consumer demands, and concerns of medical costs, supports in principle maternity care by certified nurse-midwives.

However, the North Carolina Obstetrical & Gynecological Society recognizes that in order to continue the high standards of maternal care that have been achieved, certain safeguards must be instituted to protect both the certified nurse-midwife and the patient.

To this end, the certified nurse-midwife should have close liaison and supervision by a practicing medical doctor with obstetrical hospital privileges. We do not believe the proper safeguards for maternal and perinatal care can be achieved in the home environment.

The North Carolina Obstetrical & Gynecological Society recognizes the past and continuing excellence of the present boards of nursing and medical examiners and believes that the licensing process for certified nurse-midwives properly falls under their jurisdiction.

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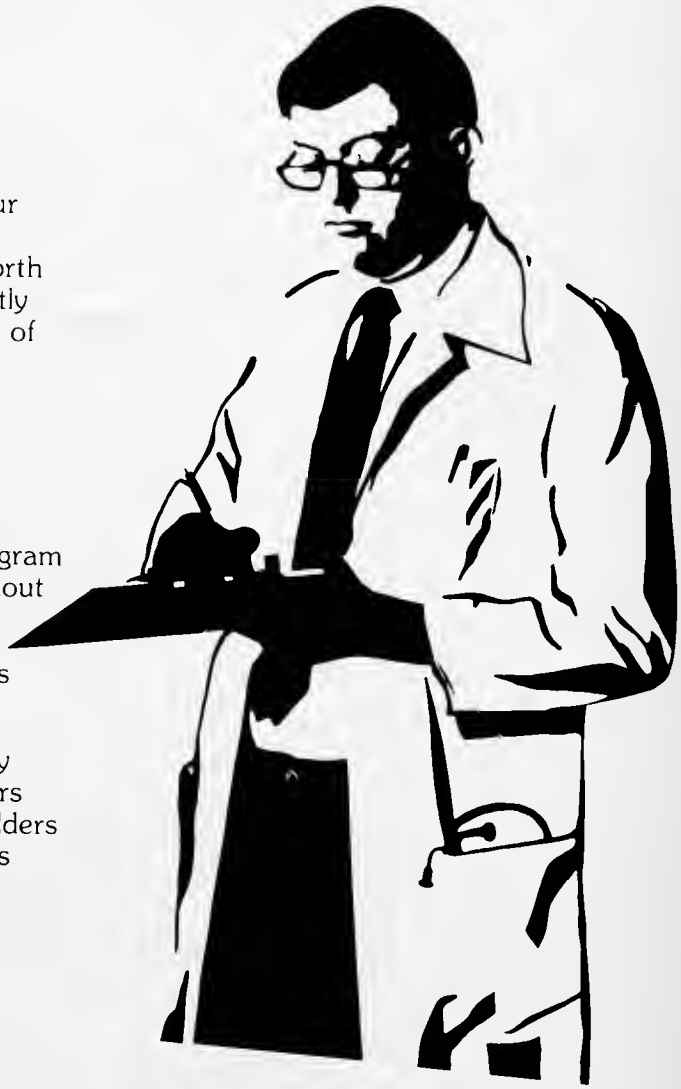
- participation in the company through a Board of Directors elected entirely by policyholders and guaranty capital holders



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Letters to the Editor

About the *Journal*

Praise is more pleasant than criticism, but criticism may be more useful in the end. Letters to the Editor received after publication of the April issue present both points of view. First for the praise:

Congratulations on the April issue. I like it from the cover and binding to the contents, all of which I have read.

Charles W. Styron, M.D.

I like your format, your Editor's Philosophy, and your first issue in general. You are off to a great start!

James E. Davis, M.D.

I have just read your first issue of the *North Carolina Medical Journal* and want to tell you what an obvious improvement has been made already. For the first time in my years here at the North Carolina Hospital Association, I found articles of interest to us.

C. Edward McCauley,
President, NCHA

My comments are stimulated by the changes in the *Journal* which you have brought about and by "Kempner Revisited." I am aware that some of the powers that be in the State Medical Society have had misgivings about the *Journal*, even to the point of giving up on it. So I want to congratulate you on a wonderful start. As a Past President of the Society I naturally want to see the Society succeed in all its endeavors.

George G. Gilbert, M.D.

I am highly pleased that you are now Editor of the *North Carolina Medical Journal*. Your first edition certainly gives promise that we can look forward to a publication of excellence and high quality. You may be assured of my support in meeting the five objectives for the *Journal* which you suggest.

George W. Paschal, Jr., M.D.

I want to express my delight and appreciation of the new format and policies you are bringing to the *NC Medical Journal*. It was indeed a pleasant surprise to receive it this month. The cover, the inside layout, the articles, the center blue section for patients add such depth to the publication. May it survive and flourish!

J. F. Hammett, M.D.

Then for the criticism:

As one who has always been an admirer of the *North Carolina Medical Journal*, looking forward to each issue while knowing it certainly isn't in the ranks of the *New England Journal of Medicine* or the *Journal of the American Medical Association*, I am considerably concerned about our new cover design. In the first place I do not get the point of cartoons on the cover of a professional medical journal. Secondly, I am not sure I get the point of the cartoon at all. Thirdly, this particular one really doesn't look very esthetic, and fourthly, I am concerned about the patient's interpretation of this cartoon. I feel that the doctors' image suffers enough already. I am certainly in favor of a journal that may be of some benefit to the patient by imparting knowledge to the physician reader and to the patient reader; but, I am also concerned about the maintaining the professional aspects of the literature.

George D. Kimberly, M.D.

I think your first issue looks very good and I have received a number of favorable comments. The shade of blue on the pages for laymen is too dark, making it difficult to read or to see the drawings. A light blue would be better.

Ernest Craige, M.D.

The innovative changes in the current issue of the *North Carolina Medical Journal* are most appealing! I would like to share the features for patients by placing the *Journal* in the waiting room but would prefer this portion be detachable or a separate insert for waiting room use. Some of the ads which list side effects of drugs, a large ad relating to professional liability insurance and classified ads listing physicians' salaries are among many items which are not suitable for patients to see. Perhaps a separate looseleaf type of notebook could be developed by the Medical Society Communications Department for physicians to keep in their waiting rooms so that *Journal* articles appropriate for the public could be changed from time to time to keep up the interest. Of lesser importance is the continuing friction between town and gown. An article in next month's issue, "Diagnosis and Treatment of Cushings Disease at Duke University 1977-1982," implies to some people that Duke has better experience handling this syndrome than the local practitioner; I am confident some physicians would not put the *Journal* out in the waiting room with even this line of reason affecting their judgment.

Elizabeth P. Kanof, M.D.

The biggest and most obvious problem with the articles is there is no summary or abstract to help the reader decide if he wants to read the whole article, or a conclusion that would serve the same purpose. Putting the *Journal* in the waiting room is not appropriate for general use: too many drug ads, classified ads, etc.

Robert S. Cline, M.D.

The Editor replies:

There is certain to be controversy about the Features for Patients section. I would like to give you the benefit of two statistics. (1) The New England Journal of Medicine *has 8393 non-M.D. readers. Most of these (6276) are not in the allied health professions. (2) B. Dalton Booksellers, a nationwide chain, states that the* Physicians Desk Reference *is on their best-seller list of hardbound books in the first three to four months of each year. They believe very few of these purchasers are doctors.*

To the Editor:

Seven years ago I took care of a man who was then in his late fifties who had suffered a traumatic amputation of his right leg which eventually resulted in a hip disarticulation. This left him with phantom limb pain, from which he claimed little relief with non-narcotic analgesics. In retrospect, it is apparent that he had been a long-term abuser of narcotics (primarily Percodan and Dilaudid). He subsequently manipulated multiple physicians into providing narcotic prescriptions for him to support his habit. He would typically visit a physician, ask for help, and would obtain a prescription for a small number of doses of a narcotic. He would then move on to the next physician and was able to obtain large quantities of narcotics by visiting many doctors in an area over a period of several days before moving on to a new area. He repeatedly refused help from psychiatry and from drug abuse counsellors and refused to attend a formal pain clinic.

After this pattern became established, he began to sell the narcotics that remained after he had satisfied his own habit. Two years ago he contacted me again and persuaded me that he was at the end of his rope and unable to obtain any relief from his pain. He asked me to provide him with a letter stating that I had been his physician and that I felt he had real pain. I provided this letter because the man presented a very convincing picture of a patient unable to obtain relief through the usual medical channels. He cited his poverty, his appearance, and his history of alcohol and drug abuse as reasons why physicians had ignored him or refused to help him. This proved to be an elaborate con game which I should have seen through at the time. He was subsequently arrested for possession and distribution of multiple controlled substances and is out on bail, awaiting trial.

I have written this letter in the hope of informing the readers of the *Journal* of this pattern of drug abuse. This man presents a very convincing picture of refractory pain and equally convincingly portrays the medical establishment as unwilling to help him. I doubt that he is the only drug abuser using these methods of obtaining drugs and I urge readers of the *Journal* to be wary of this type of patient. Although they present a very convincing story, they are typically from out of town and usually are unwilling to wait for their medical records to catch up with them. Other patterns include getting a prescription for a friend, asking for additional refills, and bringing illegible prescriptions from a hometown doctor.

Robert L. R. Wesly, M.D.
1908 Cannon Drive
Durham 27705

To the Editor:

I read with some concern the article by Dr. Stuart Bondurant which appeared in the January 1983 *Journal* entitled "Is N.C. Educating Too Many Physicians?"

I am concerned about limiting the number of physicians because any limitation on the number of people educated in any profession means that there are numbers of young people in North Carolina and in the United States who desire to become physicians who are denied that opportunity because a decision is made somewhere by someone in the educational community that only x number of people should be educated as physicians.

This produces two inevitable results. Some people who would make excellent physicians and who are absolutely dedicated in their desire to help humanity are denied that opportunity.

It reduces competition in the field and lessens the necessity for excellence. Any one whose position in a profession is protected by a limitation on the number of persons who may enter that profession is tempted to produce less for more both in quantity and quality than that person would produce if spurred by competition.

When anyone makes it impossible for any person to obtain any education in any field the creativeness of the entire profession is stifled and potentially brilliant physicians are excluded, thus doing irreparable injury both to those excluded and their potential patients.

Surely none of our young people should be arbitrarily denied the freedom to learn because our professions embrace a collectivist view of society, the repudiation of which has made us the greatest nation on earth.

We should also remember that many areas of this world have minimal or no medical care. Surely the United States, which has tremendous resources and facilities for alleviating pain and suffering in the entire world, should not by arbitrary decision reduce the quality or quantity of medical care in the world at large.

In conclusion may I observe that any limitation on the acquisition or dissemination of medical knowledge ill becomes a Christian nation.

J. Nat Hamrick
312 N. Main Street
Rutherfordton 28139

Dr. Bondurant replies:

To the Editor:

I appreciate the opportunity to respond to the letter of Mr. J. Nathaniel Hamrick concerning the article which I wrote in the January 1983 issue of the *North Carolina Medical Journal*. Mr. Hamrick advocates the expansion of medical schools to accommodate all who wish to become physicians (possibly, although he does not say so, limited to those who meet some threshold of ability). I do not agree with Mr. Hamrick that society would be best served by admitting all who desire to enter our medical schools. I disagree for two reasons:

First, the quality of the educational experience of our students would necessarily be different were our schools to admit all who wished to enter even if there was a proportionate increase in resources available to the schools. Medical schools are very different from law schools in this regard. For example, many medical schools have saturated the facilities for clinical teaching to the point that further increases in students will change the inherent nature of the experience for all. Nationally, there are slightly more than twice as many applicants to medical school as there are entering physicians in the nation's medical schools. In my judgment, the medical schools could not accommodate such an increase without substantial change in their effectiveness.

Second, I do not agree with Mr. Hamrick that the in-

terests of society are best served in medicine by following simple principles of supply and demand. It is certainly true, as he points out, that many professions, medicine included, have used the limitation of the number of practitioners contrary to societal interests. The record of the last 20 years, however, is one of extraordinary growth in the size of the nation's medical schools to the point where many outside of medicine question whether or not society will be well served by the "surplus" of physicians. The issue is extremely complex but I believe that one can say that there is no conclusive evidence that a further increase in the number of physicians beyond those being presently educated would improve the health or lower the cost of health care for the nation.

Stuart Bondurant, M.D.
UNC School of Medicine
Chapel Hill 27514

To the Editor:

Should the legislature pass the current bill for the incorporation of the Institute of Medicine in its current form, the Institute of Medicine will be charged with monitoring and studying health matters that affect our patients. Because the Institute will incorporate the medical "learned-minds" of our medical schools' and our Area Health Educational Centers' faculties, their research facilities and their educational resources, the Institute will be able to give timely and "learned" opinions on a variety of issues that would affect the health of North Carolinians.

However, any Institute with such lofty charges and goals can only succeed if the physicians of our fine state make it a part of their personal challenge and responsibility to be involved. I believe only through VERY ACTIVE, early participation by our physicians can the Institute of Medicine evolve as the major resource, envisioned by its founders.

It is the challenge; it is the duty of the physicians of North Carolina to add to their personal commitments and accept the responsibility of assisting the Institute of Medicine in meeting its promises, its challenges and its responsibilities to our patients and to North Carolina.

Don C. Chaplin, M.D.
Kernodle Clinic, Inc.
Burlington 27215

To the Managing Editor:

You and the printer did me in. My editorial comments on page 278 of the May 1983 *Journal* were garbled to the extent that they make no sense. Please take better care of me.

Eugene A. Stead, Jr., M.D.
Durham 27710

To The Editor:

I was surprised and disappointed to read G. R. Selby's editorial on "AIDS and the Moral Law" in the May 1983 *North Carolina Medical Journal*. This thinly disguised religious tract has no place in a journal that has scientific pretensions, and that claims to be for North Carolina doctors and their patients. The *North Carolina Medical Journal* has abdicated its responsibility to both groups by taking the editorial position presented by Selby. His concept that the extreme human misery AIDS causes is deserved by its victims, because they have violated a "universal natural moral law," is antithetical to my ethical beliefs, and I hope to those of other North Carolina physicians.

I fear that your intolerance of social diversity and your consequent effort to justify the existence of a serious illness by claiming that it is punishment from God can easily be extended to other behavior that somebody doesn't like. Are we really prepared to tell the man who suffers from lung cancer that he has only received his just deserts because he wouldn't stop smoking? Does God truly "reveal both his will and his law" by giving the drinker cirrhosis of the liver? The inevitable result of this attitude towards illness is neglect by the physician and despair in the patient.

I share with the Reverend G. R. Selby a longing for an understanding of a universal, natural moral law. However, I deeply regret his attempt to equate that moral law with his own parochial beliefs. He has misunderstood history and misapplied theology, and used them to promote a pernicious view of human illness.

I hope that you will exercise care in the future to avoid this sort of inappropriate editorial.

Jared Goldstein, MD
Randleman, NC 27317

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Please see brief summary of prescribing information on the next page.

"The race against MS is a race against the clock." ...Paul Newman

As diseases go, multiple sclerosis is one of the cruelest and most unpredictable. MS attacks the central nervous system. It's not thought to be hereditary and it strikes without warning. It generally affects young adults between the ages of 20 and 40. Because it strikes in the primé of your life MS can cripple emotionally, physically and financially. Althought MS doesn't do the same amount of damage to all patients, for some, coordination may be totally destroyed. So you see we're racing against the clock and must act quickly.

There's no cure for MS so far, but researchers are working on one. And people in the sports world are helping to fight back. People like Muhammad Ali, Jimmy Connors, Tom Seaver, Steve Garvey, O.J. Simpson, Lynn Swann and myself, Paul Newman. Won't you join us? Please send your check to the National Multiple Sclerosis Society, 205 East 42nd Street, New York, New York 10017. Or call (212) 986-3240 to see how else you can help. Because MS strikes at the worst possible time. Just when you're starting to live.

Athletes vs. MS Multiple Sclerosis

Roche salutes
the history of North Carolina medicine

THE 18-HOUR-A-DAY DOCTOR

Dr. Gaine Cannon

A modern-day version of the country doctor on horseback, Dr. Gaine Cannon covered his scattered practice around the Blue Ridge Mountain country near Balsam Grove, North Carolina, in a four-wheel-drive Jeep wagon.[1]

On an average working day, Dr. Cannon rose at sunup to see patients at his converted-farmhouse clinic before setting out to make his usual 15 to 20 house calls around the countryside. Generally, after treating his primary patient, he saw each member of the family, as well—his personal effort at preventive medicine.

Multiple services

With the nearest hospital some 60 miles away and no pharmacy closer than an hour-and-a-half drive, Dr. Cannon filled his own prescriptions, delivered babies and treated many patients at a centrally located general store with the most modern techniques and medications. After a day on the road—usually within a 50-mile radius—Dr. Cannon's office hours would begin at 5:30 p.m. and stretch on until the last patient was attended to. His record-keeping sessions routinely filled the hour before midnight—rounding off Dr. Cannon's 18-hour day.

At all hours

But emergencies often interrupted his sleep. Dr. Cannon claimed his real office hours were 24 hours a day, and his patients revered him for it.

Dr. Cannon died in 1966 at the age of 68. He will be long remembered—most especially by the more than 5000 North Carolinians he helped bring into the world, some of them at the side of a rutted country road.

Reference: 1. Doctor in the backwoods. In Lee RV, Ermerl S *et al*: *The Physician*. New York, Life Science Library, Time Inc., 1967, pp 38-50

ROCHE

When the history reveals anxious depression...

For the estimated 70 percent of nonpsychotic depressed patients who are also anxious,[1] Limbitrol provides both amitriptyline, specific for symptoms of depression, and the effects of Librium® (chlordiazepoxide HCl), the tested and dependable anxiolytic. Limbitrol is, therefore, a better choice for these patients than dual agents that contain a phenothiazine, a class of antipsychotic drugs used infrequently in nonpsychotic patients.[1]

62% of Overall Improvement...Within the First Week

Limbitrol also has a rapid onset of action which may lead to greater patient compliance. In a multicenter study, patients taking Limbitrol experienced 62% of their overall improvement within the first week of therapy.[2]

In another multicenter study,[3] the following symptoms associated with anxious depression were significantly reduced during the first two weeks of therapy:

- ☐ Headache—79%
- ☐ Early insomnia—91%
  Middle insomnia—87%
  Late insomnia—89%
- ☐ Gastrointestinal upset—73%

In two multicenter studies, only 1.9% of Limbitrol patients experienced cardiovascular side effects.[3]

Patients should be cautioned about the combined effects with alcohol or other CNS depressants and about activities requiring complete mental alertness such as operating machinery or driving a car.

References: 1. Rickels K: Drug treatment of anxiety, in *Psychopharmocology in the Practice of Medicine,* edited by Jarvik ME; New York, Appleton-Century-Crafts, 1977, p. 316 **2.** Feighner JP *et al: Psychopharmocology 61:* 217-229, Mar 1979. **3.** Data on file, Hoffmann-La Roche Inc., Nutley, NJ

In moderate depression and anxiety

Limbitrol® IV

Tablets 5-12.5 each containing 5 mg chlordiazepoxide and 12.5 mg amitriptyline (as the hydrochloride salt)
Tablets 10-25 each containing 10 mg chlordiazepoxide and 25 mg amitriptyline (as the hydrochloride salt)

Please see summary of product information on following page.

LIMBITROL® TABLETS Ⓝ Tranquilizer—Antidepressant

Before prescribing, please consult complete product information, a summary of which follows:

Indications: Relief of moderate to severe depression associated with moderate to severe anxiety

Contraindications: Known hypersensitivity to benzodiazepines or tricyclic antidepressants. Do not use with monoamine oxidase (MAO) inhibitors or within 14 days following discontinuation of MAO inhibitors since hyperpyretic crises, severe convulsions and deaths have occurred with concomitant use; then initiate cautiously, gradually increasing dosage until optimal response is achieved. Contraindicated during acute recovery phase following myocardial infarction.

Warnings: Use with great care in patients with history of urinary retention or angle-closure glaucoma. Severe constipation may occur in patients taking tricyclic antidepressants and anticholinergic-type drugs. Closely supervise cardiovascular patients (Arrhythmias, sinus tachycardia and prolongation of conduction time reported with use of tricyclic antidepressants, especially high doses. Myocardial infarction and stroke reported with use of this class of drugs.) Caution patients about possible combined effects with alcohol and other CNS depressants and against hazardous occupations requiring complete mental alertness (e.g., operating machinery, driving).

Usage in Pregnancy: **Use of minor tranquilizers during the first trimester should almost always be avoided because of increased risk of congenital malformations as suggested in several studies. Consider possibility of pregnancy when instituting therapy; advise patients to discuss therapy if they intend to or do become pregnant.**

Since physical and psychological dependence to chlordiazepoxide have been reported rarely, use caution in administering Limbitrol to addiction-prone individuals or those who might increase dosage; withdrawal symptoms following discontinuation of either component alone have been reported (nausea, headache and malaise for amitriptyline, symptoms [including convulsions] similar to those of barbiturate withdrawal for chlordiazepoxide).

Precautions: Use with caution in patients with a history of seizures, in hyperthyroid patients or those on thyroid medication, and in patients with impaired renal or hepatic function. Because of the possibility of suicide in depressed patients, do not permit easy access to large quantities in these patients. Periodic liver function tests and blood counts are recommended during prolonged treatment. Amitriptyline component may block action of guanethidine or similar antihypertensives. Concomitant use with other psychotropic drugs has not been evaluated; sedative effects may be additive. Discontinue several days before surgery. Limit concomitant administration of ECT to essential treatment. See Warnings for precautions about pregnancy. Limbitrol should not be taken during the nursing period. Not recommended in children under 12. In the elderly and debilitated, limit to smallest effective dosage to preclude ataxia, oversedation, confusion or anticholinergic effects.

Adverse Reactions: Most frequently reported are those associated with either component alone: drowsiness, dry mouth, constipation, blurred vision, dizziness and bloating. Less frequently occurring reactions include vivid dreams, impotence, tremor, confusion and nasal congestion. Many depressive symptoms including anorexia, fatigue, weakness, restlessness and lethargy have been reported as side effects of both Limbitrol and amitriptyline. Granulocytopenia, jaundice and hepatic dysfunction have been observed rarely.

The following list includes adverse reactions not reported with Limbitrol but requiring consideration because they have been reported with one or both components or closely related drugs.

Cardiovascular: Hypotension, hypertension, tachycardia, palpitations, myocardial infarction, arrhythmias, heart block, stroke.

Psychiatric: Euphoria, apprehension, poor concentration, delusions, hallucinations, hypomania and increased or decreased libido.

Neurologic: Incoordination, ataxia, numbness, tingling and paresthesias of the extremities, extrapyramidal symptoms, syncope, changes in EEG patterns.

Anticholinergic: Disturbance of accommodation, paralytic ileus, urinary retention, dilatation of urinary tract.

Allergic: Skin rash, urticaria, photosensitization, edema of face and tongue, pruritus.

Hematologic: Bone marrow depression including agranulocytosis, eosinophilia, purpura, thrombocytopenia.

Gastrointestinal: Nausea, epigastric distress, vomiting, anorexia, stomatitis, peculiar taste, diarrhea, black tongue.

Endocrine: Testicular swelling and gynecomastia in the male, breast enlargement, galactorrhea and minor menstrual irregularities in the female and elevation and lowering of blood sugar levels.

Other: Headache, weight gain or loss, increased perspiration, urinary frequency, mydriasis, jaundice, alopecia, parotid swelling.

Overdosage: Immediately hospitalize patient suspected of having taken an overdose. Treatment is symptomatic and supportive. I.V. administration of 1 to 3 mg physostigmine salicylate has been reported to reverse the symptoms of amitriptyline poisoning. See complete product information for manifestation and treatment.

Dosage: Individualize according to symptom severity and patient response. Reduce to smallest effective dosage when satisfactory response is obtained. Larger portion of daily dose may be taken at bedtime. Single *h.s.* dose may suffice for some patients. Lower dosages are recommended for the elderly.

Limbitrol 10-25, initial dosage of three to four tablets daily in divided doses, increased up to six tablets or decreased to two tablets daily as required. Limbitrol 5-12.5, initial dosage of three to four tablets daily in divided doses, for patients who do not tolerate higher doses.

How Supplied: White, film-coated tablets, each containing 10 mg chlordiazepoxide and 25 mg amitriptyline (as the hydrochloride salt) and blue, film-coated tablets, each containing 5 mg chlordiazepoxide and 12.5 mg amitriptyline (as the hydrochloride salt)—bottles of 100 and 500, Tel-E-Dose® packages of 100, Prescription Paks of 50.

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FOR SALE: Collins Stead-Wells office Spirometer Model 06041. Like new. All accessories included. Excellent for office spirometry. $700. or best offer. call 919/781-7500 or write Wake Internal Medicine Consultants, Inc., 2800 Blue Ridge Blvd., Suite 502, Raleigh, NC 27607.

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NORTH CAROLINA: Medical Director and full-time emergency physician needed for 198 bed hospital with good medical staff support. Located in Roanoke Valley five miles south of Virginia. An AHEC library available for physicians and staff. 16,500 annual ED visits. 24 hour shifts. Flat hourly compensation with malpractice provided. For further information write or call Coastal Group, Inc., P. O. Box 15697, Durham NC 27704; (919) 471-6482; (800) 672-1665 in NC; (800) 334-1630 in US.

LOCUM for office and hospital internal medicine practice required for three weeks commencing July 16. Accommodations could be provided. Elizabeth City, NC. Dr. Tolson 919/335-2963.

HAMILTON POWER TABLE. Excellent condition. Four years old. New table costs $3800. Call me and get it cheaper. Best offer. You pay transport. 919/523-6106.

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The weight of objective evidence supports the clinical efficacy of Dalmane® (IV)

flurazepam HCl/Roche

15-mg/30-mg capsules

- Studied extensively in the sleep laboratory—the most valid environment for measuring hypnotic efficacy.[1-12]
- Studied in over 200 clinical trials involving over 10,000 patients.[13]
- During long-term therapy, which is seldom required, periodic blood, kidney and liver function tests should be performed.
- Contraindicated in patients who are pregnant or hypersensitive to flurazepam.
- Caution patients about drinking alcohol, driving or operating hazardous machinery during therapy.

Refereoces: 1. Kales A *et al: J Clin Pharmacol 17*:207-213, Apr 1977 and data on file, Hoffmann-La Roche Inc., Nutley, NJ. **2.** Kales A: Data on file, Hoffmann-La Roche Inc., Nutley, NJ. **3.** Zimmerman AM: *Curr Ther Res 13*:18-22, Jan 1971. **4.** Kales A *et al: JAMA 241*:1692-1695, Apr 20, 1979. **5.** Kales A, Scharf MB, Kales JD: *Science 201*:1039-1041, Sep 15, 1978. **6.** Kales A *et al: Clin Pharmacol Ther 19*:576-583, May 1976. **7.** Kales A, Kales JD: *Pharmacol Physicians 4*:1-6, Sep 1970. **8.** Frost JD Jr, DeLucchi MR: *J Am Geriatr Soc 27*:541-546, Dec 1979. **9.** Dement WC *et al: Behav Med 5*:25-31, Oct 1978. **10.** Vogel GW: Data on file, Hoffmann-La Roche Inc., Nutley, NJ. **11.** Karacan I, Williams RL, Smith JR: The sleep laboratory in the investigation of sleep and sleep disturbances. Scientific exhibit at the 124th annual meeting of the American Psychiatric Association, Washington, DC, May 3-7, 1971. **12.** Pollak CP, McGregor PA, Weitzman ED. The effects of flurazepam on daytime sleep after acute sleep-wake cycle reversal. Presented at the 15th annual meeting of the Association for Psychophysiological Study of Sleep, Edinburgh, Scotland, June 30-July 4, 1975. **13.** Data on file, Hoffmann-La Roche Inc., Nutley, NJ.

Dalmane® (IV)
(flurazepam HCl/Roche)

Before prescribing, please consult complete product information, a summary of which follows:

Indications: Effective in all types of insomnia characterized by difficulty in falling asleep, frequent nocturnal awakenings and/or early morning awakening; in patients with recurring insomnia or poor sleeping habits; in acute or chronic medical situations requiring restful sleep. Objective sleep laboratory data have shown effectiveness for at least 28 consecutive nights of administration. Since insomnia is often transient and intermittent, prolonged administration is generally not necessary or recommended. Repeated therapy should only be undertaken with appropriate patient evaluation.

Contraindications: Known hypersensitivity to flurazepam HCl; pregnancy. Benzodiazepines may cause fetal damage when administered during pregnancy. Several studies suggest an increased risk of congenital malformations associated with benzodiazepine use during the first trimester. Warn patients of the potential risks to the fetus should the possibility of becoming pregnant exist while receiving flurazepam. Instruct patient to discontinue drug prior to becoming pregnant. Consider the possibility of pregnancy prior to instituting therapy.

Warnings: Caution patients about possible combined effects with alcohol and other CNS depressants. An additive effect may occur if alcohol is consumed the day following use for nighttime sedation. This potential may exist for several days following discontinuation. Caution against hazardous occupations requiring complete mental alertness (*e.g.*, operating machinery, driving). Potential impairment of performance of such activities may occur the day following ingestion. Not recommended for use in persons under 15 years of age. Though physical and psychological dependence have not been reported on recommended doses, abrupt discontinuation should be avoided with gradual tapering of dosage for those patients on medication for a prolonged period of time. Use caution in administering to addiction-prone individuals or those who might increase dosage.

Precautions: In elderly and debilitated patients, it is recommended that the dosage be limited to 15 mg to reduce risk of oversedation, dizziness, confusion and/or ataxia. Consider potential additive effects with other hypnotics or CNS depressants. Employ usual precautions in severely depressed patients, or in those with latent depression or suicidal tendencies, or in those with impaired renal or hepatic function.

Adverse Reactions: Dizziness, drowsiness, lightheadedness, staggering, ataxia and falling have occurred, particularly in elderly or debilitated patients. Severe sedation, lethargy, disorientation and coma, probably indicative of drug intolerance or overdosage, have been reported. Also reported: headache, heartburn, upset stomach, nausea, vomiting, diarrhea, constipation, GI pain, nervousness, talkativeness, apprehension, irritability, weakness, palpitations, chest pains, body and joint pains and GU complaints. There have also been rare occurrences of leukopenia, granulocytopenia, sweating, flushes, difficulty in focusing, blurred vision, burning eyes, faintness, hypotension, shortness of breath, pruritus, skin rash, dry mouth, bitter taste, excessive salivation, anorexia, euphoria, depression, slurred speech, confusion, restlessness, hallucinations, and elevated SGOT, SGPT, total and direct bilirubins, and alkaline phosphatase; and paradoxical reactions, *e.g.*, excitement, stimulation and hyperactivity.

Dosage: Individualize for maximum beneficial effect. *Adults:* 30 mg usual dosage; 15 mg may suffice in some patients. *Elderly or debilitated patients:* 15 mg recommended initially until response is determined.

Supplied: Capsules containing 15 mg or 30 mg flurazepam HCl.

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Contemporary Hypnotic Therapy

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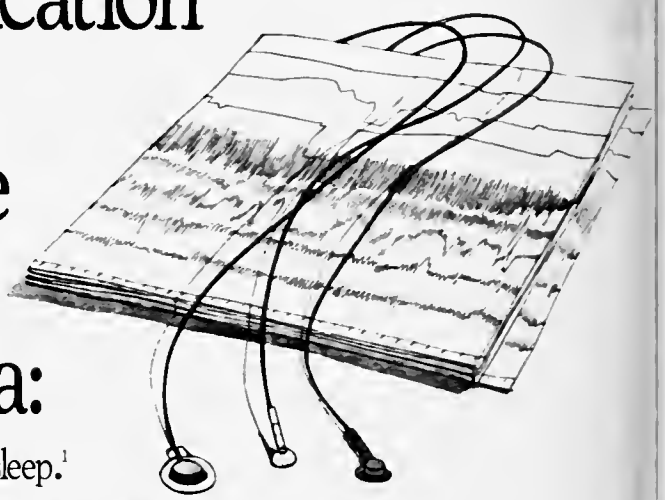
Only one sleep medication objectively fulfills all these important criteria:



- Rapid onset of sleep.[1]
- More total sleep time on the first 3 nights of therapy.[1]
- More total sleep time on nights 12 to 14 of therapy.[1]
- Continued efficacy for at least 28 nights.[2]
- Seldom produces morning hangover.[3]
- Avoids rebound insomnia when therapy is discontinued.[1,4,5]

15-mg/30-mg capsules

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Please see summary of product information on reverse side.